

NOTICE BY THE PUBLISHING COMMITTEE.

The American Journal of Pharmacy has now reached its 37th volume. On an examination of the stock of the Journal, the Committee find that three of the volumes are wholly or partially out of print—viz. vols. 1 and 2 of the first series, and vol. 1 of the second series. All the remaining volumes, twenty-one in number, they can supply on demand. Believing that the work embodies a large amount of information, extremely valuable to Apothecaries, Druggists and Physicians—comprehending, in fact, a faithful record of the development of Pharmaceutical science and invention during the period of its issue, now twenty-five years, both in Europe and America, the Committee consider that no Pharmaceutical library should be without it.

Besides the abstract and applied science embodied in this work, a large number of formulae are contained in it, including many, which, though not official, are more or less valuable and in use.

As an inducement to Subscribers to complete their sets, as far as possible, the Committee offer the back volumes to the 24th inclusive, at the reduced price of \$1.50 each, nett.

The volumes 25 to 37 inclusive, are held at the publishing price, \$3.00, unless a fall out is taken, in which case they will be supplied at \$2.50 per volume.

The Committee offer the publication price in money for the 6th number of the 1st volume, published January, 1839; for the complete 3d volume, commencing April 1850; and the complete 7th volume, commencing April, 1855.

CHARLES WALKER,
PROP. BOSTON.

EDWARD E. RAYNES,
EDWARD PARKER, } Committee.

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NOTES ON THE MERCURY OF NEW ALMADEN, CALIFORNIA.

By W. S. W. RUSCHENBERGER, M. D., U. S. NAVY.

The quicksilver mine of California is in Santa Clara county, twelve miles from the town of San José, which is fifty-four miles from the city of San Francisco. It may be reached by three routes; one by stage coach exclusively; one by way of Oakland, opposite to San Francisco, to which you are conveyed by a steamer in an hour, and then you take a stage. The third route is by steamer to Alviso, seven miles from San José. The roads are good, but, in the dry season of the year horribly dusty.

Recently a good hotel has been established, where the traveller is comfortably entertained, but not cheaply. Near it is a spring which reminds one of the waters at Saratoga. It is anticipated that this spring will attract visitors and invalids during a considerable part of the year, and it is for their accommodation the hotel has been prepared.

The mining company has built this house, and a number of neat cottages for the accommodation of the engineers, mechanics and others connected with the works. The whole is known under the name of New Almaden.

The hotel is just at the entrance of a mountain gorge, and is said to be about four hundred feet above the level of the sea. The entrance to the mine is seven or eight hundred feet higher, or about 1,200 feet above the ocean. From the summit there is a fine view of the valley of San José, which is a fertile plain (when it rains) of many miles in extent, shut in by ranges of hills of about 1,200 or 1,300 feet elevation. When the atmosphere is clear, as it generally is, shipping in the magnificent bay of San Francisco may be discerned from the heights of New Almaden.

This mine was discovered in 1843 or 4 by a Mexican, Capt. Castellero, of Santa Clara. The Indians were in the habit of painting their persons bright red; the source of this pigment they kept secret, but the Captain stealthily followed an Indian to it, and thus it became known. Such is the story.

The working of the mine was begun in the year 1846 or 7, by an English Company, but from some reasons, was not profitable. In 1849 or 50, it fell into American hands, and now yields about 30,000 flasks annually.

The present entrance of the mine is by a horizontal shaft, (drift) which, with a rail way, penetrates the hill 1,200 feet. From this several passages, some seven or eight feet in diameter, made by removing the cinnabar, dip; the greatest depth from the surface at present attained is said to be 400 feet.

The ore is freed from its natural position by blasting, and by pick and shovel. The miners, native Mexicans, carry the ore in hide sacks on their backs, to the railway, by which it is brought into the open air, where it is assorted. The rich compact ore, in masses of from three to twenty pounds weight, is separated from the small fragments found mingled with what resembles common yellowish earth or clay. The several kinds are packed in coarse hempen sacks, which are conveyed in four horse wagons, a mile and a quarter down the steep hill, to the smelting works.

The yellowish clay-like matter is converted into oblong masses, resembling large bricks in form, by the addition of water, and dried in the sun. The object of making these "adóbés" will be understood presently.

The apparatus for smelting the ore is simple. A kind of reverberatory furnace three feet by five, is arranged at the extremity of a series of chambers of nearly, if not exactly of the same dimensions, namely, seven feet long, four wide, and five high. There are eight or ten of these chambers in each series: they are built of brick, plastered inside, and secured by iron rods, armed at the ends with screws and nuts, as a protection against the expansion by heat. The tops are of boiler iron, luted with ashes and salt.

The first chamber is for a wood-fire. The second is the ore chamber, which is separated from the first by a net-work partition of brick. The flame of the fire passes through the square

holes of this partition and plays upon the ore in the ore-chamber, which when fully charged contains ten thousand pounds of cinnabar. Next to the ore-chamber is the first condensing chamber, which communicates with it by a square hole at the right upper corner; and the communication of this first, with the second condensing chamber, is by a square hole at the left lower corner. An opening at the right upper corner of the partition, between the second and third condensing chamber, communicates with the latter. The openings between the chambers are at the top and to the right, and at the bottom and to the left alternately, so that the vapors from the ore chamber, are forced to describe a spiral in their passage through the eight condensers. The vapor and smoke pass from the last condensing chamber through a square wooden box eight or ten feet long, in which there is a continuous shower of cold water, and finally escape into the open air by tall wooden flues.

The floor or bottom of each condensing chamber is about two feet above the ground, and is arranged with gutters for collecting the condensed mercury and conveying it out, into an open conduit, along which it flows into an iron receptacle, from which it is poured into the iron flasks, through a brush to cleanse it of the scum of oxide formed on the surface on standing. Seventy-five pounds weight are put into each flask.

There are fourteen of these furnaces and ranges of condensers, with passages of eight or ten feet in width between them. A shed is constructed above the whole at a sufficient elevation to permit free circulation of the air.

It requires sixty hours to exhaust each charge of cinnabar, (10,000 lb). The fire is so regulated as to keep it uniformly at a red heat.

The cinnabar, either in irregular masses, or the finer particles worked up into the "adóbés" before mentioned, is piled in the ore-chamber, very much after the manner of arranging bricks in a kiln for burning.

The subtle nature of mercury is such that, notwithstanding the means here used to secure it, not a little escapes through the flues and the lutings. The roofs around are black with mercury, condensed in exceedingly minute globules. They may be detected in abundance by a hand microscope in the soot taken from the flues. The bricks which enter into the structure of the

condensing chambers very soon become saturated with mercury, and will yield a profit by being worked like the ores.

On examining the box, or trough of one of the series which had not been in operation for several weeks, I observed that its perpendicular sides were lined, to the depth of about one eighth of an inch, with a coat of mercury, which on being touched by the finger aggregated itself into globules, and ran down to the bottom in a tiny stream. This had been condensed by the shower through which the vapors necessarily passed to escape by the flues. The waste water is conveyed in a covered conduit about fifty yards, and at that point flows down the hill side. This conduit—a wooden box four inches square—is lined by a black deposit, which consists of mercury in minute globules. A barrel stood at the extremity of the conduit and was full of this waste water; I was assured that it had not been disturbed for a considerable time, probably two months.

An eagle (\$10) held just under the surface of this water during a minute or two and then rubbed with a finger, revealed the presence of mercury: the stars on the coin were of a bright silver white.

I filled a bottle from the barrel and brought it on board the ship.

I repeated there the experiment with the coin, and also with a slip of bright copper, but they exhibited no visible evidence of the presence of mercury.

A drop of the water spontaneously evaporated from a glass slide, left a stain which was shown, under (about 450 diameters) my microscope, to consist of fine globules of metallic mercury.

By evaporating the contents of a watch crystal spontaneously, the view was brilliant by reflected light, compared by one of the observers to the starry canopy of a clear night.

I found by comparison that the globules in good mercurial ointment were four or five times as large as those left by the Almaden water after evaporation.

Lime water produced a copious precipitate, which collected on a filter, and then submitted to the blow pipe on charcoal, yielded a very strong horseradish odor.

Very slight precipitate was produced by a solution of chloride of barium, even after standing twenty-four hours.

The presence of selenium is inferred.

The slag or *oré*, after having been submitted to the action of the furnace, was placed on charcoal with soda and subjected to the flame of a blow pipe. The horseradish odor was very marked.

The slag powdered and dissolved in aqua regia, gave a reddish brown precipitate on the addition of ammonia, which is presumed to be selenium.

Del Rio announced the presence of this mineral in the quicksilver ores of a mine in Mexico. I believe from the very limited examination I have been able to make of it, that the cinnabar of New Almaden contains selenium.

The suspension of metallic mercury in water, in a state of minute division is new to me. The specific gravity of the metal is so great compared with water, that I should have said that it would subside very speedily on standing.

The specific gravity of the waste water of New Almaden, indicated by one of Dr. W. H. Piles's carefully made hydrometers, was 1,002.

Men and other animals employed about the smelting works are obnoxious to salivation, and to mercurial affections. But those who dig the ore enjoy health.

It is a desideratum to discover a means of cooling to a low temperature the condensing chambers, which will be at the same time simple and cheap. Labor is at from three to five dollars a day, and when combined with any special intelligence, at a much higher rate. Therefore, the means of refrigeration should not be complicated, or of a kind easily put out of order.

It is believed that the addition of lime to the kiln, or in the condensing chambers, would increase the yield of mercury, but not to an extent sufficient to pay the cost of the lime at New Almaden.

The outside temperature is from 70° to 90° F., so that it is not easy to keep the condensing chambers cool by the circulation of atmospheric air. The sulphurous, or sulphydric acid eliminated prevents the circulation of water in iron tubes from being resorted to.

May not the selenium exercise an influence, catalytically or otherwise, in the smelting process?

MORE POISON IN "SODA WATER."

By JOHN T. PLUMMER, M. D.

One of our apothecaries having just fitted up a new soda-fountain, presented me with a glass of its sparkling contents projected upon raspberry syrup. After the pungency of the carbonic acid had passed off, there remained in my mouth a very sensible metallic taste, which was so persistent that it lasted several hours. I remembered that the whole apparatus was *new*; and believed that the impression left upon my tongue was not due to the quality of the syrup used.

Not satisfied with any explanation that presented itself to my mind, I returned to the store, and called for a glass of the clear water without syrup. A somewhat mawkish, metallic taste was very apparent to all who sipped it.

What occasioned the flavor in question? Could chippings of copper have been left in the "fountain?" Or a part of the fountain have escaped the tinning, leaving the copper exposed to the action of the carbonic acid? Or was the taste due to copper at all?

Ferro-cyanide of potassium added to the water produced a discoloration, varying, by time, from a yellowish to a yellowish green, greenish, and bluish hue. No precipitate followed. The addition of dilute sulphuric acid made no perceptible difference in the action of the re-agent. I then proceeded more systematically.

1. One pint of the clear soda-water was evaporated in a Berlin dish to two ounces. A white film appeared during evaporation, on the surface of the water and the sides of the vessel. This was probably carbonate of lime, from our limestone water.

There was also a slight, light-brown deposit of what I supposed was vegetable or other organic matter. As silver, lead, copper and tin were the metals which constituted the apparatus, I tested the liquid remaining in the capsule in reference especially to them.

2. Hydrochloric acid was added to the condensed fluid, and the mixture warmed. No precipitate followed. The absence of silver, mercury and probably lead, was inferred.

3. In the already acidulated liquid, I suspended a bright needle. A scarcely perceptible tarnish appeared on it.

4. Into another portion of the fluid sulphuretted hydrogen was passed. The water instantly became chocolate brown. On boiling it, a black precipitate was formed, which, on being washed, was found to be insoluble in cyanide of potassium.

5. Chromate of potash, added to another portion of the fluid, yielded a gamboge yellow precipitate, which was soluble in potash. (Colorless flocculi remained in the otherwise clear liquid.)

6. Sulphuric acid rendered the *filtered* concentrated liquid (1,) slightly milky; and after some time, a white precipitate fell.

7. In the same liquid (1,) iodide of potassium produced a fine yellow precipitate.

Thus experiments 4, 5, 6 and 7, all concurred in proving the presence of lead in the water.

8. On the addition of ferro-cyanide of potassium to the filtrate of 4, a blue tinge was given to the liquid.

9. On adding the same re-agent ($\text{Cfy} + 2\text{K}$) to the acid liquid, a clear, pea green color was produced, deepening in shade, until it changed to a fine *ultramarine* blue. A blue precipitate followed, leaving the supernatant liquid of a pea green color.

I have no authorities at hand which would justify any definite conclusions from the reactions in experiments 8 and 9; but relying upon my own examinations of solutions of tin with ferro-cyanide of potassium, I did not hesitate to infer the presence of this metal in the soda-water. (I may refer to the reactions of $\text{Cfy} + 2\text{K}$ and Sn more particularly at another time.)

To recapitulate: the soda-water contained *lead* and *tin*, but no copper or other metal sought for.

Richmond, Indiana, 12th mo. 24th, 1855.

REMARKS ON A CARBONIC ACID WATER APPARATUS.

By THE EDITOR.

Carbonic acid water, under the name of "Mineral Water" and "Soda Water," is becoming every year more extensively into use as a beverage in the warmer season of the year, and, as when pure, it is perhaps the least objectionable of all substitutes for pure cold water, its preparation is necessarily a subject of some importance to that numerous body of apothecaries throughout the country who keep it on sale. In large cities and towns the preparation of carbonic acid water has become a distinct busi-

ness, the makers furnishing the fountains or reservoirs, to the retailers; who pay an additional sum for their use; but in small towns, either the pharmacist must prepare the water himself, or have it sent from the larger towns, which last is always objectionable as inducing the necessity of keeping a larger supply than is favorable to the proper condition of the preparation. In our last number the apparatus of Bernhard, of this city, was figured and described (see page 12). In the present we will exhibit cuts explanatory of another form of apparatus, compact and simple in its construction, and well adapted for use in small towns as well as in cities, where the apothecary prefers to serve himself in manufacturing the water.



Fig. 1.

This apparatus, known as *Nichol's Patent Combination, Fountain*, (see fig. 1,) is constructed of copper thickly coated with tin on the interior surfaces. The peculiarity consists in the

union of the generator and fountain or fountains, and in employing bi-carbonate of soda in lieu of chalk or whiting as the source of the gas, with the further peculiarity that the carbonate is gradually admitted to the acid instead of the acid to the carbonate. The low price of bi-carbonate of soda, its larger yield of gas, and its affording a very soluble salt with sulphuric acid, are additional reasons for its use, when employed by the retail dealer or small manufacturer. According to the maker, the cost of charging a twelve-gallon fountain is from 37½ to 50 cts., or about three cents per gallon. The generator and fountains are calculated to resist considerably more pressure than they are subjected to, which is ordinarily about 200 lbs. to the square inch, or thirteen atmospheres, and this amount of gas pressure can be attained in fifteen or twenty minutes.

Figure 2 represents the apparatus with a single fountain, which is sufficient for the ordinary demand of a retail establishment; but where the consumption equals several fountains a day it is preferable to use that with two fountains, (fig. 1) which will enable the supply to be kept up without interruption. I is the fountain; D, the acid vessel; B, the receptacle for the soda salt; E, the washing vessel through which the gas is made to pass; A the handle of the sliding rod which opens the valve in the soda vessel and permits its descent on the acid; C, a large screw joint connecting the soda and acid compartments; H is an agitator to facilitate the absorption of the gas; G is a stop-cock to control the flow of



Fig. 2.

gas; J, a screw to empty the residual sulphate of soda; K K are stuffing boxes to keep the joints tight.

In charging the apparatus, the operator proceeds as follows: Assuming that the fountain is of size No. 1, he pours into it 13 gallons of pure water. The soda vessel B is removed by unscrewing the joint C, and filled with bi-carbonate of soda, and at the same time three pints of sulphuric acid is poured into the cylinder D, when the soda vessel is replaced. The washer, E, is filled two-thirds full with water. The stop-cocks are now opened, and a portion of the soda allowed to fall into the acid vessel by depressing the handle, A, when the gas passes rapidly into the fountain through the washer, E. When all the soda has been decomposed, about 200 gallons of gas will have been evolved and condensed under great pressure. The whole operation takes from twenty to thirty minutes.

Figure 1 exhibits the double fountain and generator, which is capable of meeting the demand of the largest establishments, by charging one whilst the other is being emptied from the counter draught-pipe. There are three sizes of each kind of these machines, the cost varying from \$100 to \$200.*

AN EXPEDITIOUS MODE OF MAKING MERCURIAL OINTMENT.

By JNO. M. MAISCH.

One of the most tedious works in the laboratory of an apothecary, is the preparation of mercurial ointment. A number of substances have been recommended to be added in small quantities for the purpose of extinguishing the mercury, and thus facilitating the work and abbreviating the process. But almost all of them have met with the opposition of physicians; some, such as sulphur, and rancid fat, on account of their chemically altering the mercury; others, like turpentine, render the ointment too irritating.

It is known that mercury, when pressed through leather, is minutely divided; in this state it may be readily mixed with the

* This apparatus is manufactured by A. J. Morse, of New York, but the apparatus may be had from T. Morris Perot, Philadelphia; V. C. Price & Co., Buffalo; J. H. Reed & Co., Chicago; and A. Leitch & Co., St. Louis.

fat. To accomplish this end, I first triturate the metal with about one third of the fat and after this has been well mixed, add the remaining two thirds, but I have found it necessary to use a fat of greater consistence than the mixture prescribed by the Pharmacopœia. I have used 6 oz. of suet, melted together with 2 oz. of lard, and while still warm, pressed the mercury through chamois leather, sprinkling it over the surface of the fat and immediately incorporating it by trituration. After this portion is well mixed, some more mercury must be sprinkled over the fat, and trituration and addition of mercury alternately continued until the 24 oz. of the last are used ; then the ointment is of a soft, nearly semi-fluid consistence, and may be easily mixed with the remaining 16 oz. of lard without application of heat. If two persons can be employed at the same time, the process will be still shortened, one may constantly press the mercury through leather while the other is incorporating it with fat by trituration.

Mercurial ointment thus prepared is of a fine grayish blue color, and contains the mercury in a totally unaltered state, and free of any irritating admixture. On keeping, however, for some time, it darkens somewhat, doubtless from the oxidation of a part of the mercury to protoxide. Another advantage of preparing this ointment in the above manner consists in the separation of the oxides of the foreign metals, which more or less are present in all commercial mercury ; they do not penetrate the pores of the leather, and will be found at the end of the process a dark powder on the inside of the leather ; if advisable, its equivalent weight in mercury may be added to the ointment, to make it of the required strength.

New York, January, 1856.

FURTHER REMARKS ON FLUID EXTRACT OF WILD CHERRY BARK, AND ON THE ALCOHOLIC EXTRACT AND WINE OF WILD CHERRY BARK.

By WILLIAM PROCTER, JR.

In the last number of this Journal (page 22,) a preparation was brought to the notice of the profession under the name of "Fluid Extract of Wild Cherry Bark." Sugar of milk or lactine was

recommended as the agent for preserving the solution of the active matter of the bark, because of the small quantity requisite to form a saturated solution, as well as because it was believed to be less likely to interfere with the functions of the stomach. But, in carrying out the idea in practice, the great bitterness and astringency of the fluid extract offered an objection to patients who have tried it, whilst when made with cane sugar, as suggested at page 23, it was found unobjectionable. I will, therefore, adopt the latter medium of preservation, and to make it clear to the reader, will repeat the formula thus modified:—

Take of Wild Cherry bark, (<i>Cerasus serotina</i> ,)	24 oz., Troy.
Sweet almonds,	3 “ “
Pure granulated sugar,	36 “ “
Alcohol, (88 per cent.)	
Water, each a sufficient quantity.	

Macerate the powdered bark in two pints of alcohol for eight hours, introduce it into a percolator and pour on alcohol till five pints have passed, observing to regulate the passage of the liquid by a cork or stop-cock. Introduce the tincture into a capsule, (or distillatory apparatus, if the alcohol is to be regained,) and evaporate it to a syrupy consistence; add half a pint of water and again evaporate till the alcohol is entirely removed. Beat the almonds, without blanching, into a smooth paste with a little of the water, and then add sufficient to make the emulsion measure a pint and a half, and pour it in a quart bottle previously containing the solution of the extract of bark, cork it securely and agitate occasionally for 24 hours, so as to give time for the decomposition of the amygdaline. The mixture is then to be quickly expressed and filtered into a bottle containing the sugar, marked to hold three pints. Water should be added to the dregs, and they again expressed till sufficient filtered liquid is obtained to make the fluid extract measure three pints. The proportion of sugar, though less than that in syrup, is sufficient to preserve the preparation aided by the presence of the hydrocyanic acid.

As stated before, the dose is a teaspoonful, which is equivalent to a wineglassful of the officinal infusion:

Alcoholic Extract of Wild Cherry Bark.

[Wild cherry bark yields to alcohol 22 per cent. of dry, deep

red, bitter, astringent extract, containing amygdaline. It is suggested that this extract may be rendered available for extemporaneous prescriptions in the following manner, so as to get the sedative power of the bark associated with all its tonic qualities.

Take of Alcoholic extract of wild cherry bark, two drms.

Emulsion of sweet almonds, half a pint.

Triturate the extract with a portion of the emulsion till dissolved, and then add the remainder and mix. This mixture should not be used for several hours after it is prepared.

The dose of this mixture should be a tablespoonful, and when desirable, its taste may be improved by the addition of sugar or syrup. It is, of course, understood that the coagulum formed by the action of the tannin of the extract with the albumen of the emulsion should remain in the mixture, which, therefore, is to be shaken before administration.

Wine of Wild Cherry Bark.

In the paper before alluded to, a method of making an alcoholic preparation of wild cherry bark of the strength of sherry wine, and, with the name of "Wine of Wild Cherry" was suggested.* Although, in my estimation, a mixture of pure alcohol and water of the strength of wine is a better menstruum for wild cherry bark than wine itself, in view of the importance of permitting the amygdalinic reaction to be thoroughly effected in presence of a sufficient amount of water, yet there are those who deny the propriety of giving the name of wine to an unfermented liquid. To meet this difficulty the following formula is suggested:—

*NOTE.—In referring to the wines of wild cherry bark, introduced to notice by B. J. Crew and others, the author remarked (page 21) that they "appear to be concentrated cold aqueous infusions, to which sufficient alcohol has been added to preserve them, say 20 per cent." In making this remark the author disclaims all intentional injustice to Mr. Crew, (who claims to use pure Sherry as the menstruum,) or others concerned. The idea intended, was, that they were aqueous solutions rendered permanent by 20 per cent. of alcohol as it existed in wine, rather than that they were made by adding pure alcohol. Unless water is present in sufficient quantity, the object of the preparation is defeated, and it is by no means certain that the full reaction between the emulsin and amygdalin can occur in presence of as much alcohol as exists in Sherry wine when this alone is used.

Take of Alcoholic extract from 24 oz. of wild

cherry bark, about,	five and a half oz.
Sweet almonds,	three ounces,
Water,	a pint,
Sherry wine,	two pints.

Beat the almonds with the water to a paste, rub down the extract with half a pint of the wine, and mix the two liquids in a bottle of the capacity of three pints, stop it closely and permit it to stand for three days with occasional agitation; then add the remainder of the wine, allow it to stand a week and filter. By this mode of proceeding, opportunity is afforded for the development of the hydrocyanic acid before the menstruum is made so alcoholic as to retard the reaction which favors its formation.

Thus made, wine of wild cherry bark is a transparent, wine-red liquid, having an astringent, bitter almond taste and odor, much less agreeable than the syrup and about the same strength.

The dose of this preparation is a teaspoonful.

PHYSICIANS AND PHARMACEUTISTS AND THEIR RELATIONS.

By J. M. MAISCH.

[Continued from page 25.]

The vocation of the physician is certainly a noble and exalted one; it wants a man, in the fullest sense of the word, to visit the sick room, to witness the sufferings of human beings in their various forms; to distribute comfort and help. But when pretenders attempt to make that high calling their own, we really do not know whether we should get angry at their deceitfulness or pity the credulity of the mass. If an adventurer of some kind or another finds that he cannot succeed, or does not make money fast enough, what is easier for him than to rent a room, calling it an office, and to put a sign out on which you may read in large characters a name with M. D. affixed to it? The newspapers open their advertising columns to any one who has money to pay for the advertisement. And what advertisements these often are! There you may find enumerated horrid diseases that are, and that have never been dreamed of, that

are the scourge of mankind, slaying thousands; and that never demanded a single victim, because they only exist in the brain of the newly inaugurated doctor and in his medical dictionary. There you may find descriptions of diseases which might just as well serve to explain the symptoms of a nervous headache, an over-filled stomach, or of consumption, or some other lingering disease. The evils perpetrated by such quacks are really uncountable; it is not only their misunderstanding diseases of the patients who place confidence in them; not only the danger arising from over-doses of medicines, the proper doses of which they cannot recollect or adjust to a peculiar case, the constitution, age, &c., of the patient; but it is, in a great degree, also, the neglect or the fear of doing anything at all, that may be productive of the worst consequences. We know a case that recently occurred, and is a striking example of a treatment of the latter sort. A young man suffering from general debility and impotency produced by excesses, called on a self-styled physician who liberally patronizes the press, having sometimes two or three advertisements at the same time in a number of the newspapers. The doctor took to electricity to cure his patient, and gave him a wash for strengthening the organs, into which he had previously put the *one* pole of his electric battery, and which, on examination, as the physician assured us under whose treatment he afterwards placed himself, proved to be nothing but clear water. That the doctor demanded good pay for his professional (?) services need not be said.

Such impostors know how to do "business"—how to entice the unfortunate sick to seek their advice. Besides the enumeration and description of diseases, they promise to cure infallibly and radically. They herald their own success by announcing the number of patients cured annually, and of those who were recommended to them by the first physicians of the country; they trumpet their skill by publishing the thanks of cured patients, which are manufactured by wholesale; they give proof of their modesty by denouncing all quacks, and by abusing all those who copy their advertisements in order to deceive the public; and they are liberal and charitable, for they profess to attend to poor people free of charge, and to pay particular attention to

those recommended to them by other physicians. It is astonishing how bold a face they are able to put on.

But there is another set of quacks known better to the public than the class before mentioned; we mean the numerous proprietors and originators of patent medicines. There seems to be a perfect mania all over the country for "inventing" and introducing new, never heard of nostrums, which, to make them valuable, are often called such barbarous names as to render a proper pronounciation highly difficult. We will not attempt to depict the means used for introducing and keeping them before the public, to expose the folly of an attempt to cure lots of diseases by one and the same remedy, or to reduce the whole pharmacopœia to a half dozen preparations which would cure any disease the human frame is subject to. A number of these nostrums have gone to the dead, and we sincerely wish all the living ones may soon follow them. We could not suppress a pitying smile the other day, on reading an article written expressly for the defence of patent medicines. The manufacturer of secret medicines, it was said, certainly put something of efficacy in it, but not in sufficient quantity to do harm, even after a continuance for some time; he pays large amounts to the press for advertising, printing, &c.; in short, he is a benefactor of mankind. The nostrums are calculated to be family medicines, and as there are nostrums that cure every thing, and hundreds for each class of the different diseases, the attendance of a physician is quite unnecessary; one quack of this sort cures more patients in a week than many physicians in a year. Their medicine is "recommended by the faculty," and their boldness, of course, is the best proof of its efficacy, notwithstanding the promulgation of a volume of testimonials from persons that sometimes never lived, and the numerous cases in which the nostrum had no effect at all, or made the sickness worse than ever.

The question of quackery in its two forms is certainly an important one, and the proper way for its suppression is still open for discussion. The wealth accumulated by the shrewd manufacturer; the money they can spend for hiring an unscrupulous press, or using the advertising space of the honest and conscientious press; the position in society attained by some quacks; the fame of some as practitioners before turning to quackery; the

standing of others as members of scientific societies or as editors of general scientific or medical journals; the usage of some physicians, otherwise opponents to quackery, to prescribe nostrums, either from a knowledge of their composition or from faith in the authors of the same; the readiness of even high-standing and learned men to give recommendations for the use of nostrums; but, above all, the thoughtlessness of those who wish to save the expenditure of money for the services of physicians, and still have to pay several times that amount for the recommended merchandize of the quacks; all these circumstances combined tend to keep the secret medicines afloat, and to add new ones almost daily to the old stuff.

To put down quackery, to expose it and reduce it to nothing, requires the efforts of all true hearted men, and especially of physicians and pharmacutists. We know it cannot be overcome all at once, but must fall by degrees, and we have no doubt it will. When questioned about the efficacy of quack medicines, we should not hesitate to state our opinion of nostrums in general, to refuse any sort of recommendation above—some are said to have derived benefit from it;—but to recommend the afflicted to seek the advice of some physician in whose knowledge and skill we can place confidence. This, we think, should be the beginning; if necessary, an explanation why the same medicine cannot answer for so many diseases or always for the same disease, which is modified by the constitution, the sex, habits, manner of living, &c. Declining on the part of apothecaries to keep quack medicines for sale has, in most cases, been rewarded by the entire confidence of the practising physician and a corresponding increase of the prescription—the legitimate pharmaceutical business. So much we are assured of, that if medical societies would take a bold stand against nostrums of any sort, and act in conjunction with the various pharmaceutical societies, to remedy this evil would then be much easier. As yet the voices in opposition to quackery, and especially the nostrum quackery, are thinly scattered throughout the country; but seldom the editor of a newspaper ventures to publish an article opposed to it. The harmonious action of the practising physician and the dispensing pharmacist is necessary, to be productive of much good; their recompense would be the increased confidence of the public.

GLEANINGS—PHARMACEUTICAL, MEDICAL AND CHEMICAL.

Purification of Honey.—According to A. Hoffman, (*Pharm. Jour.*) tannin clarifies honey by acting chemically on a gelatinous matter, which is present in it. Sometimes, owing to a deficiency of this matter, honey cannot be clarified with tannin, when the author recommends the use of gelatin, thus—28 pounds of honey is dissolved in twice its weight of water and heated to boiling, three drachms of gelatin dissolved in nine drachms of water is then added, and lastly, a solution of one drachm of tannin in water; the mixture is well stirred and kept hot for about an hour. About seven-eighths may be decanted and the remainder filtered through flannel; after which, the clear solution is evaporated.

Decoloration of Tannin.—F. Kummell states that tannin may be decolorized, if its solution in a mixture of ether and alcohol is passed through animal charcoal. In preparing tannin by percolation, he places a layer of recently ignited animal charcoal immediately above the cotton plug. The product thus obtained has scarcely any yellow color, and the solution in water, ether or alcohol is nearly colorless. Animal charcoal cannot be used when the tannin is extracted with ether alone, on account of the viscid character of the solution, nor did attempts to decolorize an aqueous solution of tannin give a favorable result.

New Hæmostatic.—Dr. Butler, of Ohio, recommends a scruple of tannic acid to be dissolved in an ounce of elixir of vitriol, and 15 drops to be given as a dose—in menorrhagia, etc.

Strawberry Leaves as a substitute for Tea.—M. Kletzinsky, of Vienna, asserts that the leaves of the wild strawberry, (*Fragaria vesca*,) gathered after the ripening of the fruit, afford an infusion possessed of agreeable properties. The leaves may be dried in the sun or in heated pans. The infusion is greenish and slightly astringent, and somewhat like that of the China plant. The infusion is miscible with milk without coagulation, possesses the same diaphoretic and diuretic properties as tea, and is slightly excitant.—(*Boston Journal*.)

Phosphorus in Wine.—Dr. Kletzinsky, (*Virg. Med. & Surg. Jour.*) believes that much of the value of wine as a therapeutical agent is owing to the phosphorus it contains, which exerts its power in the reparation of the nervous, muscular and osseous

systems. He says all good wines contain phosphoric salts in different quantities, and it is more important to determine the relative amounts of this powerful stimulant than to ascertain the proportions of alcohol, extractive matter, &c., as we may expect the most positive benefits from introducing it into the system in all adynamic diseases, ricketts, scrofula, &c., as well as in slow convalescences and many of the chronic affections.

According to the author, the preparation of phosphorus in 1000 parts of various wines is for Tokay 5, Malaga 4, Maderia and Sherry 3½, Santorina 3½, Cyprus 3½, Chateau Lafitte 2, Rhenish wines 1½, Champagne 1½. [As the phosphorus is in the form of phosphates, why should they be more effective in this form than in that much more abundant source of them, the cereal grains? —EDITOR.]

Deuto-chloro-bromide of Mercury.—This new compound of mercury has been suggested as a therapeutical agent. (*Jour. de Chim. Med.*, Dec. 1855.) It is prepared by putting a drachm of chloride of bromine in a half pint flask with three fluidounces of water, and then adding hydro-sublimed calomel in small portions with agitation, until the solution becomes colorless. It is then filtered and evaporated to one-third, and the salt crystallizes as the solution cools. The mother water yields more of the salt by evaporation.

Deuto-chloro-bromide of mercury crystallizes in white flattened needles, is soluble in water and alcohol, has an acrid and caustic taste, loses some water of crystallization by exposure to the air, is volatile in close vessels. It forms, with lime water, a chestnut brown precipitate, which distinguishes it from corrosive sublimate.

Gutta Percha Caustics.—Dr. Maunoury, of Chartres, (*Reper. Pharm.*) recommends the use of gutta percha as a means of rendering caustics more manageable. The following is his process for preparing chloride of zinc.

Take of Chloride of zinc, two parts,
Gutta percha, in powder, one part.

Introduce this mixture into a tube or porcelain dish, and heat gently over an alcohol lamp. Under the influence of heat the gutta percha softens, the particles cohere in a spongy mass, which retains the powdered chloride of zinc, and may be made into any convenient shape, which it retains on cooling. This

gutta percha caustic has the following advantages:—1st, It is not alterable in the tissues. 2d, It retains its consistence and flexibility. 3d, It can be inserted easily, owing to its pliability, into the natural passages, as the urethra and nostrils, and into those of fistulas. 4th, The surgeon can form it, at will, into any shape required, as in plates, threads, bougies, tablets, &c. 5th, And lastly, it has the valuable advantage of permitting, by its porosity, the exudation of the caustic, and thus opening a free passage for the result of the action of the caustic on the tissues.

Besides chloride of zinc, Dr. Maunoury has applied, in this way, caustic potassa, arsenious acid, iodide of lead, cinnabar, tartar emetic, etc.

Nux Vomica as an Aperient.—Among the conditions over which nux vomica, and its active principle, strychnia, possess most useful powers, is that of habitual constipation, from muscular atony of the intestinal tube. At the City Hospital for Diseases of the Chest, we observe that Dr. Peacock and Dr. Andrew Clark are both in the habit of frequently resorting to it for this purpose. It is generally given in combination with the compound rhubarb pill, and in doses of the extract of from a sixth to half a grain. Of itself it can, perhaps, scarcely be deemed an aperient—that is, it does not so much excite peristaltic action, as supply tone to the weakened muscular coat, by which it is enabled to respond efficiently to other irritants. Hence the need for combination with rhubarb, aloes, or some similar drug. Dr. Peacock mentioned to us a case under his care in St. Thomas's Hospital, in which a man of feeble intellect, and torpid nervous system generally, had derived great benefit from its employment. At first, the bowels were obstinately costive, and lavements produced no action; but since the use of the nux vomica (twice daily, gr. ss.) they have so far increased in power and susceptibility, that simple injections are quite sufficient, and procure all the action that is necessary.—*London Med. Times and Gaz.*

New Filter.—Dublanc recommends for rapid filtration, a wire frame made in the shape of a funnel of tinned or silver wire, in such a manner that the alternate folds of a ribbed filter fit upon the wires. A second wire frame fitting against the other folds, is placed inside for the purpose of holding the filter in its place.—*London Phar. Jour. from Dingler's Polytechnisches Journal.*

VERATRIA AND ACONITIA CONSIDERED IN A TOXICOLOGICAL
AND PHARMACO-DYNAMICAL POINT OF VIEW,

By DR. PRAAG.

The author has studied the action of veratria on vertebrated animals, particularly on the mammalia, and also on birds, reptiles and fish. He has analyzed with care the symptoms observed, in order to learn the action of this medicine on different systems and organic apparatus. Recapitulating afterwards, he deduces certain general propositions in regard to the physiological action of veratria which he found in a great many points analogous to that of delphinia.

The following is the author's summary of the properties of this substance :

The respiration and circulation become less active ; the muscles lose their tension ; the irritability of a great many of the nerves, particularly of the peripheral cutaneous nerves, is considerably abated. On the contrary, very small doses suffice to cause vomiting and sometimes diarrhoea. More frequently, however, the vomiting does not occur but with strong doses. The urinary secretion is not much augmented ; that of the saliva is sensibly increased. All the symptoms are preceded by a certain excitation. The period of excitation is characterized by accelerated respiration, frequent pulse, spasmodic muscular tension, and very great nervous excitability. Death appears to proceed from a paralysis of the spinal marrow.

The author has also instituted some experiments on the human economy, and found its action the same as on animals.

In the employment of veratria we should keep in view its depressing influence on the respiration and circulation, perhaps also its property of diminishing muscular irritability. It ought, therefore, to be efficacious in febrile affections accompanied by muscular tension, as for example, in typhus with "erithrism," in rheumatic fever, scarlatina, traumatic fever, strangulated hernia, and acute peritonitis, under the condition that the patients have not been too much debilitated by other causes. It will be appropriate, also, owing to its action on the pulse and respiratory function, to render service in pneumonia, pleurisy, and diseases of the heart clearly inflammatory.

The author concludes his essay by a review of the diseases in which he has employed veratria.

Aconitia. The author has experimented with this alkaloid on dogs, rabbits, birds, frogs and fish.

Aconitia slackens respiration, paralyzes the system of voluntary muscles and deprives the cerebral nerves of their power of action; it appears to be nearly without influence on the circulation, or at least it renders this very variable and irregular. It produces a dilatation of the pupil, and an augmentation of the saliva, whilst the urine does not appear to be affected. It occasions in man a painful sensation in the cheeks, upper jaw and forehead, and causes death by asphyxia. The author says but little in regard to the diseases in which it should be used. It ought certainly to be useful in delirium and mania arising from excitement. Perhaps it will be indicated in "tonic or clonic" cramp, in tetanus, trismus, chorea, and spasmodic asthma of a nervous type.

The largest dose given by the author without danger was three-quarters of a grain (0.0488 gramme.*)

NEW PROCESS FOR REDUCING OXIDE OF IRON BY MEANS OF CARBONIC OXIDE.

By M. EUGENE FEGUEN.

Reduced iron, quite lately scarcely known as a product of the laboratory, has become, since the important researches of M. Quévenne, a therapeutic agent of great value; because of its perfect insipidity, easy tolerance by the stomach, and prompt assimilation, advantages which no other ferruginous preparation can dispute with it.

It is ordinarily prepared by reducing one of the oxides of iron by means of hydrogen, an expensive process, since it requires

*[NOTE.—Either there is some mistake in the figures used at page 164 of the *Repertoire de Pharmacie*, for 1855, from which we translate this article, or else the aconitia used by Dr. Praag was impure, as, in fact, much of the commercial aconitia is known to be. For this reason we feel best satisfied to caution our medical readers, as in a much more minute dose its power has been manifested in other hands.—EDITOR AM. JOUR. PHARM.]

the employment of sulphuric acid and zinc, which are more costly than those used for preparing carbonic oxide.

The apparatus that I have employed in my experiments is composed of a metallic [iron] tube placed horizontally in a furnace in such a manner as to be easily surrounded by burning charcoal. Two-thirds of this tube is filled with oxide of iron in troches, the other third with charcoal of poplar or willow in small fragments which are prevented from mixing with the oxide by a piece of iron wire gauze. The end of the tube containing the carbon is connected with a generator of carbonic acid, obtained by means of marble and muriatic acid, the gas before entering the reduction tube is washed in a bottle containing sulphuric acid, which serves to regulate the evolution of the gas. The other end of the tube is furnished with a tube dipping into a vessel of mercury through which the resulting gas escapes.

The apparatus being mounted, the whole of the reduction tube is carried to a red heat; when the carbonic acid in passing the red hot carbon is deoxidized and converted into carbonic oxide, which by its contact with the oxide of iron becomes again carbonic acid. By this process the iron is reduced much more certainly and a great deal more promptly than by hydrogen, because the affinity of carbonic oxide for oxygen is much stronger than that of hydrogen for oxygen, a fact demonstrated by M. Henry in a conclusive manner, in mixing hydrogen, oxygen and carbonic acid in an eudiometer and passing an electric spark through the mixture when the carbonic oxide had become carbonic acid.

Besides the economy of time, this process gives also a great advantage in reference to the cheapness of the materials used. Marble is of no value, muriatic not much dearer than sulphuric acid, whilst the carbonic acid which flows from the apparatus, if it is not used to saturate the carbonated alkalies, can be conducted by means of a caoutchouc tube to the generating apparatus.

Instead of the subcarbonate of iron, which, notwithstanding the washing, retains always sulphate of soda, I prefer to employ the oxide of iron obtained by precipitating the chloride by ammonia, because by calcination it can be totally deprived of the ammoniacal salt admixed with the oxide.—*Repertoire de Pharm. from Journal des Connaissances Med.*

ON TINCTURE OF ACETATE OF COPPER.

By DR. RADEMACHER.

Take of Sulphate of copper,	90 parts.
Acetate of lead,	115 "

Triturate them till liquified, add 530 parts of distilled water, and boil in a copper vessel; when cold add 400 parts of alcohol, and leave in contact during four weeks with frequent agitation.

The following is the manner of using this tincture in *acute fevers* :—

Take of Rademacher's tincture of acetate of copper,	6 parts.
Gum tragacanth,	4 "
Cinnamon water,	30 "
Distilled water,	220 "

A table spoonful to be given every hour. This medicine does not produce either nausea or vomiting.

If copper is administered in proper doses it does not affect the intestinal canal, it acts in a gentle, very peculiar manner unlike any other medicine. It is a substance that assimilates very well in the human organism. Copper is equally advantageous in acute and chronic diseases, both in those which consist peculiarly in a single affection of the organism, as well as those which have their origin in a primitive constitutional disease, and an idiopathic affection of an organ.—*Repertoire de Pharmacie*, Dec., 1855.

ON THE PREPARATION OF CONCENTRATED ALCOHOL.

By M. EUGENE FEGEUX.

Alcohol of 40° (Cartier), is a reagent which the pharmacist often needs in the analyses he is called to make. The following is an economical mode of preparation, which always gives excellent results :—

Take one kilogramme (2 lb 3 oz.) of carbonate of potash of commerce, one kilogramme of quicklime; mix with three litres of alcohol of 36°, putting the whole in the boiler of an alembic; and commence the distillation, being careful to test the first product with the alcoholmetre. It seldom happens that the first portion is as strong as 40°, and it is necessary to return this to

the still until the proper degree of concentration is attained; then after each litre ($2\frac{1}{10}$ pints) that passes, add to the contents of the alembic a litre of ordinary alcohol, and continue the process till the product ceases to be of the strength of 40° . Then after each litre of alcohol that distills add half a litre of water. By this process, with these quantities of quicklime and carbonate of potassa, and 18 litres of alcohol of 36° , there will be obtained 12 litres of alcohol of 40° , 4 litres of alcohol at 38° , 36° , 32° and 30° respectively, and two and a half litres between 26° and 22° .

This process is very economical, since there is no loss of alcohol, and the mixture of lime and potash can afterwards be used in the preparation of caustic potash.

If all the alcohol is added at once, without water, only eight litres of alcohol of 40° and seven litres of from 38° to 22° are obtained, which arises from the retentive power of the mixture in the still and the loss, in distillation, together.

These results have been confirmed by eight successive trials.
—*Journ. de Pharm.*, Jan., 1856, from *Jour. des Connais. Med.*

NEW PROCESS OF MANUFACTURING SODA AND SULPHURIC ACID.

By M. JEROME NICKLES.

In place of a dull and imperfect review of the "Universal Exposition," it seems better to describe a new process, yet unpublished, which promises to change one of the most important industries of the age.

Notwithstanding the improvements in the manufacture of artificial soda, Leblanc's process is still continued in practice with a few changes, furnishing hence very large residues of oxysulphuret of calcium and preventing the sulphur of the sulphuric acid from serving several times.

This is owing to the great degree of perfection to which the manufacture of sulphuric acid is now carried; the very perfect condensation of the hydrochloric acid and its applications; the low price of the materials used, the lime and combustibles, and the simplicity of the apparatus required for transforming the sulphate of soda into the carbonate; and finally the fact that

the manufacture of sulphuric acid in connection with that of artificial soda, constitutes a complete and symmetrical work in which nearly all the products are utilized. Improvements that have been proposed have not been adopted, either because they derange this symmetry of operations, or else because of the cost of introducing them, or they are adapted only to certain circumstances or localities. The process now brought forward escapes these objections. It is by M. Emile Kopp, formerly Professor in the School of Pharmacy of Strasburg, and has already been put into practice in a manufactory in Lancashire, England, at Church near Manchester.

The process consists in decomposing sulphate of soda by a mixture of oxyd of iron and carbon, and treating the product of the reaction in the way described below. The proportions employed are as follows :—

Sulphate of Soda ($\text{SO}^3 \text{NaO}$),	125 kilograms.
Peroxyd of Iron (Fe^2O^3),	80 “
Carbon,	55 “

The sulphate of soda may without inconvenience contain some common salt; but then the oxyd of iron and carbon should be proportioned only to the pure and dry sulphate of soda present in the crude material. A furnace for calcination is used, taking care to break up the larger lumps. The oxyd of iron should be weighed dry and in a fine powder, and should be as pure as possible.

For the first operation, instead of the artificial or native peroxyd of iron, the carbonate (spathic iron) may be employed, or the magnetic oxyd, or even iron filings. But in the case of the last, the quantity of carbon should be diminished, since metallic iron acts as a reducer of the sulphate of soda. It will be soon seen, that whatever the compound of iron used, there will be shortly only the peroxyd, and this is regenerated constantly in the operation.

The mixture of sulphate of soda and oxyd of iron which is obtained as a residue in the process of decomposing common salt by the sulphate of iron, is readily adapted to Kopp's process, since, if the proportions are correctly taken, it is only necessary to add the requisite quantity of carbon. This carbon may be coke, or any other organic reducing substance; but the quantity

will vary with its reducing properties. In England they use ordinary coal.

The amount of oxyd of iron must be such as will combine with all the sulphur of the sulphate of soda to form SFe . For 9 of the pure and dry sulphate, not less than 5 parts of the pure and dry oxyd of iron are required; a small excess of oxyd of iron is advantageous. If the oxyd contains lime it should be removed by treating with hydrochloric acid and washing; for the lime would give rise to CaS , then $CaO SO^3$, and then again CaS , increasing unnecessarily the volume of material under manipulation, and causing a loss of carbon and heat. The carbon should not be in excess, as it favors the formation of sulphuret of sodium, and because also of this excess remaining with the sulphuret of iron, will afterwards afford, in the roasting of the latter, some sulphurous acid mixed with the carbonic acid. The proportion of carbon should hence be diminished until there is a minute proportion of the sulphate of soda left undecomposed in the blocks of crude ferruginous soda.

The quantity of the mixture that may be put into the calcining furnace at one time will depend of course on its size; but the amount may be full twice as large as in the Leblanc process, since the ferruginous soda works more easily than the ordinary soda.

For *calcination*, the furnace may be similar to that for the calcareous soda; but to economise heat, there had better be two or three stories, the lowest nearest the fire. The furnace then holds three charges at once, which are moved downward in succession, another being added above when one is taken out below.

The treatment in the furnace is like that for the crude calcareous soda, and the phenomena are nearly the same. The whole softens, becoming pasty, and the fluid as the action goes on disengages a yellow flame; then the action, which has been very bright, diminishes as the flames become less abundant, and when the mass is homogeneous, it is finished. It is then removed immediately from the furnace, being run while still red into a wagon on wheels in which it cools and solidifies, having been partly covered for security from contact with the air. When cold, it is a block in the form of a parallelopiped, blackish in color and more or less porous, very hard and of considerable den-

sity. The surface has a coppery reflection. In fracture, it has a uniform aspect, a crystalline texture, and a greenish and brilliant metallic reflection.

It now remains to treat this crude ferruginous soda, so as to draw off on one side the soluble carbonate of soda, and on the other the insoluble sulphuret of iron. The method used with the crude calcareous soda would give only bad results. In fact, the mass expands on the action of water, becomes very voluminous, difficult to wash, and affords a liquid containing much caustic soda and also sulphuret of sodium.

The washing is, however, easy after a preparatory operation which M. Kopp calls "*délitation*." It is as follows: The crude ferruginous soda left exposed to the air under a shed, undergoes a change, which is the more rapid if the air be charged with moisture and carbonic acid. The lustre fades, the block breaks to pieces and becomes covered with an abundant blackish pulverulent material; and this goes on so rapidly that in a few hours it is reduced to a hillock of this powdered substance.

This change is due to the absorption of oxygen, water and carbonic acid, while heat is given out, which, without care, may rise even to ignition, in which case the powder has a reddish aspect, and contains sulphate of soda with 10 to 15 per cent. of carbonate of iron and a little sulphuret. But this high heat is prevented by removing the powder from the surface as it accumulates, so as to leave the interior open to the air and carbonic acid. Water then separates from it carbonate of soda, and the residue consists principally of sulphuret of iron.

M. Kopp aids the process by an artificial supply of cold and moist carbonic acid, as the action of the air is very slow. This process, which he calls "*carbonation*," is as follows: In a chamber, at a height of two and a half meters, a grating of cast-iron is placed, whose spaces are one and a half centimetres. The earth is removed to about a depth of one meter. The roof of the chamber is about two and a half meters above the grating. The walls have numerous holes for the passage and circulation of the air. In the lower part, the carbonic acid is introduced. The blocks of crude ferruginous soda are placed on the grating, on their small face; and as they crumble, the powder falls below where it encounters and rapidly absorbs the carbonic acid. A

block of 250 kil. requires as a maximum a space of a meter, and the process is complete in eight or ten days. Consequently a space of 20 meters by 10, will answer for 200 blocks, which will furnish more than 50,000 kilograms in ten days, equivalent to 5000 kilograms a day. Ten metric quintals of coke, worth in England 7 to 8 francs, suffices to carbonate 90 to 100 quintals of dry and pure carbonate of soda.

The material when ready for lixiviation should be pulverulent, fine, gray or blackish-gray in color, and without hard fragments. It is well to use a coarse seive to remove the stony matters present, retaining them to be lixivated apart, taking care to reject the insoluble residue. The sifted powder forms with water a lye which is clear in five or ten minutes, holding a heavy deposit, with often a coppery reflection.

The *lixiviation* should be carried on methodically either by filtration or decantation, by means of warm water at 30° to 40° C. Weak solutions are used in lixiviating new portions of the powder.

When the exterior temperature is not too high, the solutions furnish after 24 to 48 hours, without concentration, an abundance of finely crystallized limpid carbonate of soda. By dropping in a bit of dry carbonate of soda, the crystallization is often hastened.

The residue, principally sulphuret of iron, is received on a filter or porous surface. In this state, it alters slowly. It is dried by heat or pressure and made into a brick. It is so combustible that it will take fire below 100° C., when the drying is nearly complete. This sulphuret affords the sulphur for making sulphuric acid, in which change, the iron becomes peroxyd and is then ready to be used again. It is thus seen that a single proportion of sulphur may be utilized a large number of times, in transforming common salt into sulphate of soda. But the oxyd of iron gradually becomes impregnated with the impurities of the common salt, the sulphate of soda and coal, and it must then be renewed; yet it may be used when it contains even 40 per cent. of impurities.

When the oxyd of iron contains sulphate of soda, it is necessary to change the proportions of the mixture for the crude

soda. It has been found by experiment that the proportions most convenient are—

Sulphate of soda,	125 kilograms.
Peroxyd of iron, proceeding from the sulphuret,	140 “
Carbon,	70 to 75 “

and these proportions should be preserved for the subsequent operations, as long as the rotation of the same oxyd and same sulphuret of iron continues.

The same process may be used with the oxyds of manganese and zinc, but with greater difficulties, as the “*délimitation*” and “*carbonation*” in these cases are more complicated.

Paris, Oct. 30th, 1855.

Silliman's Journ., Jan., 1856.

REPORT OF A COMMITTEE TO CONSIDER AND REPORT ON THE SUBJECT OF HOME ADULTERATIONS.

The subject of home adulterations of drugs naturally attracted the attention of the community, and especially of pharmacians and physicians, in connexion with that of the foreign, to which we have applied so stringent a law.

No doubt the sophistication of drugs is as well understood in this country as on the other side of the Atlantic, and that if we could apply a remedy as general in its application, we should detect an amount equally astonishing. This is one of the arguments used by the opponents of the drug law, that medicines can be as readily adulterated here as abroad; but we contend that this is no argument against shutting out foreign adulteration, and we hope some of these days to put a stop to the evil at home. The precise method of doing this is not yet apparent, neither is it within the scope of the duties of this Committee to suggest a remedy. One of the results of the different reports from time to time upon this subject, will be to call the attention of the community to the subject, and create a public sentiment that shall demand purer and better medicines when needed, thus drawing the necessary discrimination between the qualities of them when offered either in packages or at retail.

The Committee do not design, at present, a full report, as there are still under their observation and that of others who have aided them in this matter, such articles as are usually met with.

Some are of more, some of less importance, all, however, sufficiently so, we think, to merit attention and remark. They are mostly articles that have been found on sale in the interior towns and cities, purchased at the cities East, where most of the wholesaling is done. A few instances may be noticed:—

Balsam Peru has been met with, possessing none of the characteristics of genuine balsam except in color and consistency, and upon analysis affording no cinnamic acid.

Pulv. Capsicum.—The sample examined had a brick dust color, little pungency, and filled with yellow specks and strong odor of turmeric. It was a mixture of tumeric and American capsicum, and, of course, almost inert.

Castor is found with the follicles filled with saw dust to half the weight of the castor.

Opium.—Since the circular of the Secretary of the Treasury fixing a per centage of morphia for this drug, a more uniform quality has been found in market; but a great many samples have been observed the past season with foreign substances, most commonly lead, inserted in the lumps, in some instances equal to 20 per cent. of the weight of the mass. We are of the opinion that this was done abroad, and probably at the port whence shipped. The different examiners should seek to detect this fraud before passing it.

Musk in pod has been observed loaded in the same way, to the amount of 20 grains in a single pod.

The Essential Oils are largely adulterated in this country.

Oil of Peppermint sometimes contains 50 per cent. of alcohol.

Oil of Rosemary is adulterated largely with turpentine, and, in short, the whole class are shamefully sophisticated.

Otto of Rose in the same class.

Cream of Tartar, adulterated with carbonate of lime, some samples to the extent of 33 per cent., others in less proportion. Sul. potash is also used for this purpose, and alum largely. Of six specimens examined by a gentleman of New York city, purchased at various shops, but one was found pure, some of them being adulterated 30 per cent. The same gentleman says, in reply to our inquiries, that from twenty-two specimens or samples of essential oils, fourteen were found to contain turpentine and other impurities. The same gentleman reports samples of powdered opium adulterated 50 per cent.

Cod Liver Oil.—All kinds of fish oil may be found neatly bottled and carefully labelled as the genuine article.

Sulphate of Quinine.—Samples have been detected with the old adulteration of mannite, and one gentleman reports quinine mixed up with fine picked raw cotton, adding to the bulk so as to fill the vial without using the requisite quantity of this valuable chemical.

Ipecacuanha in powder and Jalap in powder, each mixed with spurious matter, and English rhubarb in powder, put up for fine powdered Turkey, are not uncommon in all the markets.

Of crude materials, *Nitre*, or Saltpetre is one of the most commonly sophisticated, being adulterated with common salt and nitrate of soda largely.

These are some of the reports made to us, all from reliable sources.

The Committee have endeavored to establish points of observation in different sections of the United States, and, as far as possible, to obtain the names of houses from whom these various sophistications have been obtained. Such information they deem it best to withhold from publication at present, lest they might do injustice to parties ignorantly sending out such drugs; but they also intend from time to time to compare notes, and when satisfied of continued practices of this kind, will report such names to the Association.

In the meantime, they cannot too strongly urge retail apothecaries, especially, to be cautious of whom and what quality of medicines they purchase. It is to the dispensing apothecary that medical men and the community look for such medicines as are pure, not only "good of their kind," but of the best kind.

C. B. GUTHRIE,
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Proceed. of Amer. Pharm. Association, 1855.

THE USEFUL PRODUCTS OF THE NATURAL ORDER
PALMACEÆ.

The natural order Palmaceæ comprises some of the most beautiful plants in the world, and is not only remarkable for the majestic forms of its species, and their position at the head of the endogenous division of the vegetable kingdom, but also for the great value of their products to the human family. It is this latest quality, and not the botanical history of the order, which formed the subject of Mr. Archer's lecture. He based his remarks on the system proposed by the late Mr. William Griffiths, in his work on *The Palms of British India*, though he would have preferred the arrangement of Martius, had he been able to procure his work. The first division is that of the *Calaminæ*, which comprises several most useful genera. *Zalacca*, an Indian genus, yields the beautiful sticks called Malacca canes; these are the thin stems of the *Z. edulis*; when first gathered, they are of a light yellow color, and in order to produce the much admired brown color, they are smoked, by being suspended over wood fires.

Calamus is another Indian genus, several of which yield useful products. The most valuable is the long slender stem of the *C. rotang*, or the rattan cane of commerce, so extensively used in this country for chair bottoms, &c. It is applied to an amazing number of useful purposes in India and China, not the least important of which is that of tying up packages for transport to distant countries, such bandages having an advantage which none of the ordinary fibrous materials possess, being almost imperishable, and consequently not rotted by exposure to damp in the vessel's hold. This arises from the large quantity of oil which these plants secrete and deposit on the outside of their stems. Dragon's blood is yielded by *Calamus Draco*, and perhaps other species. It is a peculiar resinous secretion of the fruit.

Many palms of this division yield sago. This farina is prepared from the trunks of these palms, which are of a gigantic stature, and as much as from 500 to 800 pounds are sometimes yielded by one tree.

Raphia is a genus of magnificent South American palms, luxuriating in the rich plains of the Amazon. One species, *N.*

tædigera, is a glorious object, the enormous plume of primate feathers rising gracefully from the top of its straight cylindrical stem, is often from sixty to seventy feet in height. It is a great blessing to the natives, who make from the hard outer portion of the petioles baskets, window blinds, &c. From the softer internal portion they make shutters, doors, boxes, and almost every other domestic article, which in other countries would be made of harder wood. The entomologists who explore its habitat are glad to get the pith for their insect boxes, in which it takes the place of cork.

Coryphinae, the second division, is typified by the genus *Corypha*, which yields numerous valuable materials. The genus *Chamærops* is the only genus which extends so far north as Europe and North America; in the former continent it is represented by *C. humilis*, which grows in the extreme south of Europe, and in the latter by *C. palmetto*, and is found in lat. 34° — 36° . The next genus, *Phoenix*, is one of the most useful of the order; *P. dactylifera*, is the well known date-bearing palm, the fruit of which is the chief food of many tribes of Asia and Africa. It has been cultivated from a very early period, and rewards the careful cultivator with improved varieties. In a letter addressed to Lord Palmerston by Dr. Richardson, on the dates of Fezzan, he states, that nineteen-twentieths of the population of Fezzan live on dates during nine months of the year. *P. Sylvestus*, is tapped for its juice, which is either fermented into palm wine or toddy, or else it is boiled for its sugar; of the latter article immense quantities are not only used in India, but also exported to this country. Division *Aricinae*. The genus *Areca* belongs to India, and is of great importance, owing to the extraordinary use of the nut of the *A. catechu*, in almost all parts of India, as a narcotic and excitant of the salinary glands.

Division *Coccinae*.—*Cocos nucifera*, the cocoa-nut palm, is an object of interest even to the inhabitants of Europe as well as the tropics. It yields us a valuable vegetable fat, the importance of which is daily increasing in the manufacture of candles and soap. For its use in making candles we are chiefly indebted to Mr. Wilson, the spirited manager of Price's Patent Candle Company. This company, the largest of the kind in the world, is making an enormous amount of goods for the island of Ceylon,

where they have large plantations of the cocoa-nut palm—the produce of each palm is enormous. An acre will yield about 4000 nuts per annum if well cultivated; if intended for oil, the kernels are extracted and are ground into a pasty mass, called *coperah*, this is submitted to the necessary pressure in the oil mills, and yields for every 100 nuts twenty pounds of the cocoa fat or oil, or 800 pounds per acre. The marc or oil-cake is valuable as food for cattle, besides which one of the most useful of our fibrous materials is derived from the husks. The genus *Attalea* is of great importance to European commerce—from one species is obtained the common Piassava of commerce, and the coquilla nut, so highly prized by turners for making a variety of small ornamental turnings. Another species, *A. cahune*, produces the cahune nut of British Honduras, which has become a matter of some interest, in consequence of several importations having been received for experiments in the production of an oil which its kernels yield in great abundance, but the difficulty of extracting the kernel neutralizes its value. The African genus *Elais* closes the list of the division *cocoinæ*, and it is unsurpassed in value by any of the *Palmaceæ*. *E. Guiniensis* yields the valuable palm oil of commerce, one of the staple imports of Liverpool.

The fruit is borne upon an immense thyme-like spadix, each drupe is pear-shaped, and somewhat less than a walnut, having a soft pulpy merocarp of a light orange color, from which the oil is yielded abundantly when the fruit is exposed in heaps to the sun in the manner employed by the olive-growers. It is quite startling if we begin to think of the vast extent to which this tree must be cultivated, for each tree does not yield more than ten pounds of oil, and the quantity annually imported into England alone is nearly 30,000 tons, which would require 6,720,000 trees; it is probable, however, that several crops are yielded in one year. Palm oil yields by distillation with acid a valuable material called *Palmitic Acid*, and this, mixed with the neutral fat of the cocoa-nut, is found to form the best known composition for candles, and is, in fact, the material of Price's candles. It is also extensively used in the manufacture of soap, and constitutes a large proportion of the grease compositions used for the axles of railway carriages. The so-called vegetable ivory,

which is the hard albuminous kernel of a very large palm called the *Phytilephas macrocarpa*, and does not range under any of the preceding divisions. Its magnificent primated leaves are from thirty to forty feet in height, and it bears immense clusters of its curious fruit at their base. When immature, this fruit yields a delicious liquid resembling a custard in richness and delicacy of flavor, but when ripe it becomes exceedingly hard, and, like ivory, it can be carved into a variety of ornaments.

Mr. Archer illustrated his lecture by a large and valuable collection of specimens, among which were a complete set of the products obtained from the cocoa nut and palm oils, by Price's Patent Candle Company.

The thanks of the meeting were given to Mr. Archer for his interesting and instructive lecture.

The PRESIDENT said he was glad to hear that Mr. Hatcher, Chemist to Price's Candle Company, at their Bromborough Pool Works, was present, and he was sure the meeting would feel gratified if he would favor them with an outline of the manufacture carried on at those works.

Mr. Hatcher remarked that the general outline of the manufacture carried on by Price's Patent Candle Company, at Bromborough Pool Works, is as follows:—The crude palm oil is melted out of the casks in which it has been imported, and allowed to remain in a melted state in large tanks until the mechanical impurities have settled to the bottom. The clean oil is then pumped into close vessels, where it is heated and exposed to the action of sulphuric acid. The glycerine is thus separated from the oil, and the coloring matter and impurities are carbonized and partly rendered insoluble. The oil, which has now a greyish-brown shade, is washed to free it from the acid. From the washed product distillation now separates the mixed fatty acids (palmitic and palm-oleic acids) as a white crystalline fat, while the residuum in the still is converted into a fine hard pitch. This pitch is fit for any of the purposes to which ordinary pitch is applicable. This mixed fatty acids may be made directly into candles, or they may be separated by hydraulic pressure, aided, if necessary, by heat. The effect of this process is to remove from the mass the liquid part (oleic acid,) which is, after purification, fit for burning in lamps and other purposes. The hard

cake left in the presses is nearly pure palmitic acid—it is brilliantly white, not at all greasy, and has a melting point at 135° to 138° . It is fit for the manufacture of the finest candles, either alone or in admixture with the stearine of the cocoa-nut oil.

The Company employ 2000 hands, and have, during part of the winter, manufactured from £15,000 to £20,000 worth of candles weekly.—*Trans. Liverpool Chem. Association, in Pharm. Jour.* Dec. 1855.

NOTE ON CANADIAN ISINGLASS.

By PROFESSOR OWEN, F.R.S.

In the department of Canada [Paris Exhibition, 1855,] admirable for its arrangement, and for the illustrative selection and excellent quality of the products of that important Colony, an article of commerce, new in the sense of its being unknown to the Canadians as a native production in 1851, is exhibited, of excellent quality, and of annually increasing abundance. I allude to the Isinglass obtained from the sturgeons (*Acipenser* [*Huso* ?]) which abound in the great rivers and lakes of North America. Noticing the absence of this article in the Canadian department of the London Exhibition of 1851, I at that time called the attention of the Colonial Commissioner to the fact of the existence in Canada of the fishes which yield the most valuable kind of isinglass, and I introduced to the Commissioner the Chief London importer and preparer of isinglass, from whom he received the requisite details as to the best mode of obtaining and preparing isinglass, and as to its commercial value.

My attention was called by the same Commissioner on my first visit to the Canadian department in the "Exposition Universelle," to the specimens there exhibited, and he gratefully recounted the success that had attended the efforts to establish a commerce for this new and valuable product, which, previous to 1851, had been rejected amongst the useless entrails of the sturgeons.

The value of the isinglass from this fish is chiefly due to its peculiar organic texture, on which its property of clarifying wines and beer depends; no artificial isinglass, however pure

the gelatine, or identical as to chemical composition, with the air-bladder of the sturgeon, answers the purpose of the preparer of fermented liquors.

Hitherto Russia has been the chief source of the supply of isinglass. Our present relations with that country add to the value of the development of the same product in one of our own colonies; and it might be recommended to the Colonial Authorities to afford every due encouragement, aid and instruction to the Canadians dwelling in the vicinity of the rivers and lakes, in the capture of the sturgeons, and the preparation of the air-bladder, and the outer tunic of the alimentary canal, after the modes of obtaining the best Russian isinglass.—*Pharm. Jour. Dec. 1855, from Notes of Remarkable Objects in the Paris Universal Exhibition.*

EXAMINATION OF VERATRIA AND SOME OF ITS SALTS.

By G. MERCK.

Veratrine has been analysed by Couërbe, and by Pelletier and Dumas. The former obtained on an average, 69.6 per cent. of carbon and 7.2 per cent. of hydrogen (re-calculated for $C=6$); he proposes the formula $C^{34}H^{43}N^2O^6$ ($H=0.623$). The latter obtained 65.76 per cent. of carbon and 8.54 per cent. of hydrogen re-calculated for $C=6$). The diversity of these numbers, and the circumstance of my succeeding in preparing veratrine in considerable quantity beautifully crystallized, and therefore perfectly pure, whilst the above-mentioned chemists operated upon a resinous body, induced me to submit this substance to a fresh examination.

The veratrine employed was prepared in the following manner: A dilute solution of pure commercial veratrine in alcohol containing as much water as possible, was evaporated on the water-bath at a gentle heat, during which a portion separated in the form of a white crystalline powder, mixed with a brown resinous mass. The latter could be got rid of by washing with cold alcohol. By dissolving the crystalline veratrine thus obtained in highly-rectified alcohol, and leaving the solution to evaporate spontaneously, I obtained it in crystals of about half an inch long, in the form of rhombic prisms.*

* The amount obtained is very small in proportion to the amorphous

The crystals, which are at first perfectly colorless and transparent, soon effloresce in the air, become porcellanous and very pulverizable. They are insoluble in boiling water, but are thereby rendered opaque, and lose their form without fusing. They are readily soluble in alcohol and ether, especially the latter. When concentrated sulphuric acid is poured over them, they color it first yellow, and then carmine-red. With concentrated muriatic acid they give a dark violet solution, especially when heated; on the surface of this, small oily drops are formed.

Veratrine neutralizes the dilute acids completely, furnishing colorless solutions, which dry into gum-like masses. Couërbe obtained the sulphate and muriate in a crystalline form, but I did not succeed in doing so. The solution in muriatic acid gives with chloride of platinum a precipitate which is soluble in a large quantity of water; with chloride of gold it gives an insoluble, and with perchloride of mercury a crystalline precipitate.

The analysis of veratrine, dried at 212° F., gave,—

	I.	II.	III.	IV.	V.		
C	64.73	64.51	64.99	65.00	..	64=384	64.86
H	8.84	8.55	8.76	8.70	..	52 52	8.78
N	..	..	..	..	5.5	2 28	4.73
O	..	..	..	..	..	16 128	21.63

These numbers lead to the formula $C^{64} H^{52} N^2 O^{16}$.

Chloride of Gold and Veratrine.—A solution of veratrine in muriatic acid was added to an excess of a solution of chloride of gold; the precipitate was washed with water, and after drying dissolved in alcohol, from which it separated on cooling, in fine, yellow, silky crystals. These were purified by repeated crystallization from alcohol, and dried at 212° F. Analysis gave:—

	I.	II.	III.	IV.	V.	VI.		
C	41.31	41.05	..	..	..	..	64=384	41.25
H	5.97	5.91	..	..	..	..	53 53	5.69
N	..	..	..	..	..	..	2 28	3.01
O	..	..	..	..	..	..	16 128	13.75
Au	..	..	21.03	20.87	20.87	21.26	1 196.4	21.09
Cl	..	..	..	..	..	..	4 141.6	15.21

Hence the formula is $C^{64} H^{52} N^2 O^{16} HCl + AuCl^3$.

veratrine employed, so that the latter is probably a mixture of the pure base with resin; and the presence of this resin may be the reason why it is impossible, or very difficult, to obtain crystals from the alcoholic solution of ordinary veratrine.

Sulphate of Veratrine.—An excess of veratrine was treated with dilute sulphuric acid; the perfectly neutral solution was filtered from the undissolved portion, and left to evaporate over sulphuric acid. When dry, the salt formed a colorless gum-like mass, which was readily triturated, and became electrical when rubbed. Dried at 212° F., it gave the following numbers:—

	I.	II.	III.	IV.			
C	59.48	59.45	..	..	64=384	49.90	
H	9.10	8.44	..	..	53 53	8.26	
N	..	..	..	..	2 28	4.38	
O	..	..	..	..	17 136	21.22	
SO ⁵	..	..	6.26	6.33	40 40	6.24	

From this the formula $C^{64} N^{52} N^2 O^{16}$, $HOSO^3$.—*Chem. Gaz.*, Nov. 15, 1855, from Leibig's *Annalen*.

NOTE ON VARIOUS PHENOMENA OF OXYGENATION.

By F. KUHLMANN.

New Process of Formation of Sulphuric Acid.

It is well known that many hydrocarbons become resinified by contact with the air, in consequence of an absorption of oxygen. This is the case with most of the essential oils, and the drying oils undergo analogous modifications by a slow acidification; but it has not been suspected that these hydrocarbons, before undergoing any considerable modification in their constitution and properties, form, as it were, a provision of oxygen under such conditions, that when they come in contact with bodies which have the property of more immediately forming an intimate combination with oxygen, they yield the absorbed oxygen to the latter, and again acquire their original state, becoming again capable of attracting oxygen from the air. In these cases the resinifiable essential oils constitute sources of oxygen for the benefit of other bodies, and to a certain extent play the part taken by deutoxide of nitrogen in the manufacture of sulphuric acid.

When oil of turpentine is exposed to the air for a few days, and then agitated with a solution of sulphurous acid in water, the mixture becomes strongly heated, the temperature rises to 122° F., and even higher, and the sulphurous odor soon disappears,

leaving only that of the turpentine. In this reaction, which appears to be facilitated by the solar radiation, formation of sulphuric acid takes place at the expense of the oxygen absorbed by the turpentine, which is taken from it by the sulphurous acid before it has time to appropriate it in a more permanent manner.

If sulphurous acid gas be passed into a moist glass globe containing the vapour of an oxygenated essential oil, the sulphurous acid disappears by degrees; on the other hand, if a mixture of an aqueous solution of sulphurous acid and an aërated essential oil be allowed to become concentrated in contact with the air, the sulphuric acid formed carbonizes the essential oil without the necessity of raising the temperature of the mixture.

The oxygenating action of the aërated essential oil is not confined to sulphurous acid; it extends also to other acids, such as hyposulphurous acid, the sulphites, arsenious acid, &c.

Peculiar Reactions of the Essential Oils in Painting.

The essential oils, from the nature of their constituent principles, may be regarded as possessing naturally, and especially under the influence of heat or of the sun, a reductive power which acts slowly upon white lead and the colored oxides. However this may be, the resinifiable essential oils temporarily possess another property of an opposite nature, as I have just shown; and this deserves to be taken into consideration in the study of the modifications undergone by paintings in oil, namely, that of absorbing oxygen by mere contact with the air. The result of this is, that at the moment of their employment the essential oils may exercise an oxidizing action, tending to destroy vegetable colors and to modify some mineral colors. Thus

Litharge, heated with aërated oil of turpentine furnishes the puce-colored oxide of lead.

If oil of turpentine be agitated at the ordinary temperature with the hydrated protoxides of iron, tin and manganese, these oxides pass to a higher degree of oxidation. With a solution of protosulphate of iron, basic sesquisulphate is produced, which separates from the liquid. The white precipitate formed by ferrocyanide of potassium with a protosalt of iron immediately acquires the intense color of prussian blue.

Blue and red flowers, decolorized by sulphurous acid, reacquire

their colors by contact with the aërated essential oil. The essential oil, freshly distilled, possesses no oxidizing power.

In the association of colors applicable to painting in oil, regard must therefore be had not only to the modifications which may be produced upon certain colors by the various mutual reactions of the coloring matters, but also to the oxidizing action of the essential oil, which must be manifested at the first moment of its application in the form of varnish.

General Considerations.

In all the reactions just referred to, the oil of turpentine, and in general the essences which are capable of absorbing oxygen from the air, behave as oxidants, the energy of which is sufficiently marked by the great elevation of temperature produced by the contact of the aërated essential oil with a solution of sulphurous acid.

It is important to ascertain whether this oxidizing property belongs to certain oils, and whether the proof of this fact may not account for the frequent spontaneous combustion of oiled tissues. Considerable interest also attaches to the investigation of the action of the vapors of essential oils upon putrid miasmata, and the determination of the question whether, in these cases, there is not a combustion of the principles diffused in the air.

If oxygen can thus dissolve in certain liquids without combining, we are led to suppose that where it is disengaged it exerts its action upon the bodies with which it is in contact in the dissolved state before becoming gaseous. Are not the same circumstances presented in all the chemical reactions in which in our explanations we have recourse to the intervention of nascent gases?

Thus we shall be led to inquire whether other bodies do not share with certain essences in the power of forming a provision of oxygen, and yielding this reagent to assist in various reactions. This study may throw great light upon the phenomena of animal and vegetable physiology. The solution of oxygen in the blood by the act of respiration, and its subsequent assimilation, already present a great analogy to the phenomena which have just been described. As a question of health, it would be advisable to ascertain what may be the consequences of the re-

spiration of air charged with essential oil in apartments newly varnished. On the other land, we know how unfit water which has not been aerated is for good alimentation.—*Ibid*, from *Comptes Rendus*, Sept. 24, 1855.

ON THE REDUCTION OF IRON BY HYDROGEN.

By PROF. WOEHLER.

(Translated by J. M. Maisch.)

To obtain an oxide of iron suitable for the process of reduction by hydrogen, Woehler follows a way proposed by Faraday for obtaining a good polishing powder. *Pure* sulphate of iron (green vitriol) which needs not to be exsiccated, is mixed with pure table salt, (two or three times the weight of the anhydrous vitriol) and in a Hessian crucible heated to redness, and melted. After cooling and washing with water, oxide of iron remains behind in dark red, shining scales. By this process some iron is lost by the sublimation of some chloride, which however is insignificant, considering the cheapness of the material. This oxide is then introduced into a clean gun-barrel or glass-tube, which, if necessary, may be surrounded by a layer of clay. The hydrogen must be dried by chloride of calcium or sulphuric acid; crude oil of vitriol may be purified by Buckner's method (*Amer. Journ. Ph.*, 1855, 417) from all arsenic, which otherwise would be taken up by the iron, rendering it unfit for medical use. It is, however, without any influence on the purity of the iron, if hydrogen be evolved by iron, (wire or nails,) instead of by zinc, in which case the pure sulphate of iron will at the same time be obtained.

After the atmosperic air is expelled from the apparatus, the pipe is heated to redness, and the current of hydrogen is continued until water ceases to escape on the open end of the tube; the apparatus is then allowed to cool before the iron is taken out, otherwise it will take fire and burn. The reduced iron appears in thin grey scales, pseudo-morphoses of the crystals of the oxide; they are porous, and may be easily reduced to the finest powder, which is light grey, without lustre, catches fire and dissolves in diluted sulphuric acid, without leaving a residue.

If, before pulverizing, it shows partly a darker or even black color, the reduction has not been complete.

Another probably more recommendable mode for preparing the iron, is the reduction of the oxalate of the protoxide iron by hydrogen. This salt, remarkable for its fine lemon-color, may, as is well known, be obtained by precipitation of concentrated solution of sulphate of iron with oxalic acid. The dry salt is so easily and at so low a heat reduced by the hydrogen, that a glass tube will answer excellently for the operation; towards the end, however, the tube must be heated to dull redness, to prevent the iron powder from becoming pyrophoric, and afterwards the apparatus must be allowed to cool, as the iron, if only little warm, will burn in coming in contact with the air. (*Annalen d. Chem. und Pharm.*, 1855, April 125, August 192.)

ON THE ACTION OF GLUCOSE ON THE SALTS OF COPPER IN THE PRESENCE OF ACETATES.

By M. ALVARO REYNOSO.

Sulphate of Copper.—It is well known that when sulphate of copper is boiled for a long time with glucose, it is decomposed, and metallic copper is precipitated. If the sulphate of copper be mixed with acetate of soda, potash, lime, magnesia, zinc, cobalt, nickel or manganese, and then boiled with glucose, a reduction is immediately produced, and protoxide of copper is precipitated. This reaction shows that sulphate of copper is decomposed by contact with these acetates, forming acetate of copper, which is reduced by the glucose.

Nitrate of Copper.—This salt, mixed with any of the above acetates, or with acetate of cadmium, strontian or lead, and boiled with glucose, furnishes a precipitate of protoxide of copper. Although this precipitate is also produced by boiling nitrate of copper alone with glucose, there is no reason to doubt the formation by double decomposition of acetate of copper, for in the latter case the reaction takes place at the moment of ebullition, whilst with the nitrate alone it requires long boiling.

Bichloride of Copper.—When concentrated solutions of bichloride of copper and acetate of soda are mixed, the acetate of copper soon crystallizes. At first sight it might therefore be

supposed that the acetate of copper would remain in the mixture when boiled; but it is found by experiment, that at the temperature of ebullition the mixture is composed of bichloride of copper and acetate of soda; so that heat causes a reaction the reverse of that which takes place at ordinary temperatures. To see this phenomenon clearly, certain precautions must be taken. When bichloride of copper in excess is mixed with acetate of soda, a precipitate is formed, especially by boiling, which prevents the action of glucose on the mixture. The same precipitate is formed by mixing acetate of potash, magnesia, manganese, zinc, cadmium, strontian, cobalt, or nickel with the bichloride of copper. This precipitate is also produced by boiling acetate of copper with an excess of bichloride of copper, and also when chloride of sodium is added to acetate of copper.

If an excess of a very concentrated solution of acetate of soda be poured into a solution of bichloride of copper, and glucose be added to the mixture, protochloride of copper is formed on boiling, and its presence is more or less distinct according to the quantity of the acetate. If this be not in very great excess, the protochloride is seen to precipitate, leaving a colorless supernatant fluid. If the acetate of soda be in very great excess, the protochloride of copper is decomposed by it as fast as it is formed, and the final result is protoxide of copper.

Acetate of Copper.—When acetate of copper is boiled with glucose, whatever may be the excess of sugar and the period during which the mixture is boiled, the whole of the copper is never precipitated, some of it always remaining in the liquid. To effect the complete reduction of acetate of copper, it is sufficient to mix a great excess of acetate of soda or potash with this salt. This explains why the whole of the copper is precipitated when a great excess of acetate of soda or potash is mixed with the sulphate or nitrate of copper before boiling it with the glucose.

Sesquisulphate and Sesquinitrate of Iron.—Acetate of copper, mixed with either of these salts, loses the faculty of being reduced by glucose. This character, and the peculiar color of acetate of iron which makes its appearance at the moment of mixture, prove that the acetate of copper is decomposed by the iron-salts.

When acetate of soda is mixed with sulphate or nitrate of copper, acetate of copper soon crystallizes out.—*Chem. Gaz.* Oct. 15, 1855, from *Comptes, Rendus*, August 13, 1855.

DISINFECTION AND PRESERVATION OF NITROGENOUS MANURE.

[Read before the National Institute, December 3, 1855, by Dr. D. BREED, U. S. Patent Office.]

Intelligent persons are aware that the poisonous effluvia emanating from gutters, sewers, and yard vaults would soon generate a terrible pestilence in any city or town but for the constant diffusion of the poison. But it may not be so generally known that some of these hot-beds of disease can be easily rendered comparatively harmless and inoffensive. Our affected refinement shrinks from the mention of a disgusting evil, which from habit we have come to regard as necessary. Is it not, however, a false delicacy which makes us content to inhale with every breath such pestilential exhalations, and yet forbids a discussion of their properties, origin, or effects, even with a view of reform? Shall we not be more truly refined when one single square of some American city is purified from the stench of night-soil, made ten-fold more intolerable by the ignorance of the scavengers who infest every neighborhood, administering slow poison to us in our sleep, not unfrequently falling victims themselves?

Many years ago the atmosphere of Paris had become so polluted as to excite the most alarming apprehensions as to public health. Attention was directed to the privies as the chief nuisance, and various reformatory plans have been tried, until the united skill of chemists and of practical men has made Paris in this respect a model worthy of imitation. At present complete deodorization and disinfection are accomplished, so that neither scavengers nor others need suffer annoyance. Many other European cities have reformed in this respect, and America has no longer an excuse for neglecting this much-needed sanitary reform.

In privy vaults there is a process of putrefaction constantly going forward, and a consequent incessant escape of poisonous gases into the atmosphere. Moreover, the fluid portions of the

night soil percolate the earth underlying all our cities. These matters washed forward by the rains, diffuse the products of putrefaction every where; then the heat of summer, by evaporation at the surface, may bring poisonous effluvia up from the whole area of the city. The water of our wells, as is known, are impregnated with these products. Not long since an intelligent citizen requested me to make a chemical examination of the water of a well which was formerly very good, but was now strongly flavored, and by several persons it was thought to have the taste of a chalybeate water. Upon testing, the water was found to have imbibed rather freely from the privy products of the neighborhood! Such wells are common.

Not only does public health demand that this grievous nuisance should at once be abated, especially as the requisite means are simple and well known, but agriculture seconds this demand, inas much as night-soil is valuable as manure, particularly when treated so as to retain all the nitrogen, most of which is liable to escape in the ammonia which is generated during the process of putrefaction. Indeed it contains all the elements derived from the soil by vegetation, and hence is an excellent fertilizer.

The reform in Paris, to which allusion has been made, was effected by the Société d'Agriculture and the Société d'Encouragement pour l'Industrie Nationale, and in the United States we may expect reform from the exertions of agriculturists rather than from those of sanitary officers.

One general criticism may be applied to the means commonly recommended for disinfecting and deodorizing privies, sewers, and gutters. The methods proposed do not meet all the chemical conditions; they attempt too much with a single reagent. In night-soil many elements occur, forming various compounds, organic and inorganic, some acid, some alkaline or basic, some united as fixed salts, others becoming gaseous, and tending to escape into the atmosphere. Among the gaseous products are sulphydric acid, carbonic acid, ammonia, or carbonate of ammonia, together with various exhalations not yet investigated. But the quantity of some of these is so inconsiderable as to require little attention. Now, in order to completely deodorize and disinfect night-soil, it is necessary to add such different chemical reagents as will unite with each of these gases, converting them

into constituents of fixed compounds. But it often happens that a reagent that will fix one gas will expel another. Lime is in common use, because at first it mostly destroys the odor by decomposing the sulphydric acid and forming sulphide of calcium and water, $\text{H S} + \text{Ca O} = \text{Ca S} + \text{H O}$. But the sulphide of calcium thus formed is liable to be decomposed by carbonic acid, which is always present in the mass. The lime also fixes the carbonic acid, though the former expels ammonia. Moreover, the lime may hasten the oxydation of the nitrogen, forming nitric acid, which latter may either fix ammonia or expel carbonic acid. Thus lime alone cannot be an efficient disinfectant.

Again sulphate of lime, (plaster,) either calcined or simply pulverulent, is in use. In this case the sulphuric acid unites with the ammonia of the night-soil, and the lime with the carbonic acid, $\text{N H}_4 \text{O}, \text{C O}_2 + \text{Ca O}, \text{S O}_3 = \text{N H}_4 \text{O}, \text{S O}_3 + \text{Ca O}, \text{C O}_2$. The lime also, as before, will decompose the sulphydric acid, but the resulting sulphide of calcium is still liable to decomposition. Calcined plaster itself may evolve sulphydric acid by the simple addition of water, owing to the presence of some sulphide of calcium. Therefore plaster, though better than lime, can never be an effectual deodorizer. In the play of chemical affinities, when either lime or plaster is used, some of the sulphur must alternately unite with hydrogen and with calcium until it escapes in sulphydric acid at the surface. The employment of bleaching salt (so-called chloride of lime) is very objectionable on account of the chlorine thus evolved, and the consequent impregnation of the air with a poison often more deleterious than the effluvia which it is intended to destroy.

If, instead of lime or its salts, we employ a small portion of the salt of a heavy metal, as sulphate of zinc, iron, or of copper, the sulphydric acid is decomposed, as before, and fixed sulphide of the metal is formed. This sulphide is not decomposable by any substance present. Here, then, we have a complete remedy for sulphydric acid. Sulphate of iron may be the cheapest salt for this purpose, but it, as well as salts of copper, forms a black sulphide, sometimes objectionable on account of the color. The zinc salts, however, form a white sulphide, which can never render a city smutty, however freely used. Of a solution of sulphate of zinc (of 35° to 40° Baumé) it is found necessary to

employ only 2 p. c. of the volume of night-soil to decompose all the sulphydric acid, and then lime and its sulphate may be added to neutralize the ammonia and carbonic acid.

Of all the disinfectants and deodorizers hitherto employed no substance produces more remarkable effects than fresh charcoal in a pulverulent state. Its antiputrescent effects were discovered by Lowitz about 1790; but the discovery has been slowly applied. In 1829 Frigerio proposed to employ charcoal for preserving meat, and in 1836 he published in the *Brevet d'Invention* an account of a safe, consisting of a double screen of wire gauze with the interspaces filled with fresh charcoal. This safe was found to preserve meat in the hottest weather perfectly sweet for a whole week. During many years charcoal has been (especially in Europe) extensively mixed with human excrements, for which purpose it has been found to be admirably adapted, not only by its deodorizing and disinfecting qualities, but also by its being itself a powerful stimulant to the growth of vegetation. The experiments of Dr. Stenhouse, of London, prove that a carcass covered with charcoal powder emits no unpleasant odor during its entire decomposition; that hospital gangrene and other putrid sores are arrested by the use of charcoal. He suggests the use of charcoal air-filters for admission of air to apartments in infected districts, and charcoal respirators for those exposed to infection. He thinks the charcoal decomposes effluvia by simple oxidation, converting their carbon into carbonic acid, their hydrogen into water, and thus hastening decomposition, instead of being antiseptic, as heretofore supposed. The complete success of the charcoal screens used in London clearly indicate the propriety of using charcoal to arrest the contagion of yellow fever. During the recent discussion respecting the burning of bodies a lady suggested that charcoal be strewn freely into the grave so as to surround the coffin, thus completely preventing the escape of effluvia.

For the last twenty years chemists have been employed in applying their science to the manufacture of poudrette, and in investigating the causes of insalubrity connected with the management of night-soil. These investigations, conducted in different countries, have required such varied experiments that the labor may be regarded as only begun. In the present state of

our knowledge we may briefly enumerate the chief emanations from night-soil, with the best disinfectant or corrective known, as follows :

1. Sulphydric acid ; sulphate of zinc or of iron, (vitriol solution.) 2. Carbonate of ammonia ; sulphate of lime, (powdered plaster.) 3. Free carbonic acid ; lime, (quick or slaked.) 4. Putrid exhalations, (not investigated;) charcoal, (better fresh and powdered.) Only a very small portion of vitriol solution is necessary at one time, and this should be so sprinkled over the mass as to meet the gases rising to the surface. Plaster, lime, and charcoal may be used more freely ; yet a small portion of these, if frequently strewed upon the surface, will be sufficient. It has been suggested that the disinfectant be supplied, as water is, from a reservoir, by simply turning a faucet.

In the manufacture of poudrette the chief objects are, first, to preserve all the fertilizing matter of night-soil ; and secondly, to expel the excess of water, amounting in some instances to nine-tenths of the whole volume, (ordinary excrements when fresh are four-fifths water.) An excellent method of accomplishing these objects is to mix thoroughly with the night-soil a solution of sulphate of zinc, and leave at rest for a time, when the watery portion may be pumped off and allowed to flow into a sewer or gutter, (Paris Medical Police,) without forming a nuisance. It may be well to allow a small jet of solution of sulphate of zinc to mix with the stream (Messrs. Quesney) as it issues from the pump. The disinfected residue in the vault may now be removed, spread in thin layers on a resin or other water-tight floor, (A. Wallet,) and allowed to evaporate to dryness under an open shed or by furnace heat. The poudrette has been sometimes pressed in cubical masses, pierced with holes, to promote desiccation. Thus prepared it requires no packing for transportation or preservation. A little rain will do it no harm if the wet surface be immediately dusted with plaster. Poulet has recommended the employment of an emulsion of oils and alkalies in connection with the zinc salts, in order to obtain a clearer liquid to pump off.

But the better method is recommended by Susser & Fouchet, Lepelletier, (Moniteur Industriel,) by which all the mineral and organic matters are entrapped in a gelatinous precipitate of silica.

This process is employed after the ammonia salts have been fixed. An abundance of silicate of soda is mixed with the night-soil, and then sulphuric or some other strong acid is added to precipitate the silica: $\text{Na O, Si O}_2 + \text{S O}_3 = \text{Na O, S O}_3 + \text{Si O}_2$. The silicate of soda is very cheaply prepared by heating in a furnace a mixture of common salt and sand: $\text{Na Cl} + \text{Si O}_2 = \text{Na O, Si O}_2 + \text{Cl}$. As the refuse zinc salt may be employed for artificial manure, Gaultier de Claubry has suggested that the extensive utilization of such refuse in this way may so reduce the expense of operating the galvanic battery, as to introduce it as common power apparatus.

In Paris, it was found that one man with a horse would manufacture, in the old way, with plaster and coal, 25 tons of poudrette per day, and that the entire cost of manufacture amounted to only \$1.87 per ton. According to chemical analysis the nitrogen in night-soil is 13 per cent. of the dry matter. Now, the best Peruvian guano contains only 14 per cent. of nitrogen, whilst the average quality contains but 6 or 7 per cent. Therefore poudrette, properly prepared, will be as valuable as the best Peruvian guano, and of twice the value of the average. The experience of farmers sustains the results of analysis.

The nitrogen in urine is from 25 to 33 per cent. of the solid matter. A manure prepared from urine, and sold under the name of urate, is a most powerful fertilizer, equal to four times its weight of average guano, or twice the value of best Peruvian.

In the various processes of manufacturing poudrette, it is too often forgotten that the night-soil should be treated before the urine is decomposed. The urine is much richer than the faeces in nitrogen. The nitrogen in urine is found chiefly in that remarkable compound denominated *urea*, which forms white prismatic crystals, quite inodorous. Urea contains two atoms of nitrogen, two of carbon, four of hydrogen, and two of oxygen, and its formula, deduced from its ultimate analysis, would give, $\text{N}_2 \text{ C}_2 \text{ H}_4 \text{ O}_2$. But organic chemistry regards such a formula as empirical, and groups these elements according to their products of decomposition, and the compound which may be formed by a part or all of them with oxygen or with the halogens, by substitution or otherwise.

The true constitution of urea is expressed by the following

formula: $(N\ C_2\ H,\ O_2)\ \frown\ N\ H_3$; it is therefore urenoxyd-ammonia. Now, this urea is rapidly decomposed even at ordinary temperatures, and its elements, with two atoms of water, form two atoms of ammonia and two of carbonic acid, $(N\ C_2\ H,\ O_2)\ \frown\ N\ H_3 + 2\ H\ O = 2\ N\ H_3 + 2\ C\ O_2$. Both of these products are volatile, and therefore, if urine be allowed to decompose, the most valuable constituents for manure are lost in the atmosphere.

In estimating guano the nitrogen is the true standard of value. Estimating night-soil in the same manner, and assuming that we preserve all the nitrogen, the city of New York and environs would afford manure equal in value to 51,000 tons of best Peruvian guano, or \$2,550,000 per annum. During the last seven years, according to the Report of the Patent Office for 1854, the United States has imported on an average 45,869 tons of guano annually. Much of this guano is worthless, being so when first obtained, or having been washed in order to manufacture ammoniacal salts for sale. The practice of washing guano is a common trick of trade, and usually a safe one, since farmers never employ a chemist, and washed guano can be bought at a comparatively low price. But even estimating all the imported guano as equal to the best Peruvian, worth \$50 per ton, it would amount to but \$2,293,450, which is less by \$256,550 than the value of the night-soil of the city of New York, as above estimated. Great Britain has imported on an average during the last seven years, 138,496 tons of guano per annum, which, at \$50 per ton, amounts to \$6,924,800. The night-soil of London and environs would yield annually nitrogen corresponding to 120,000 tons of best Peruvian guano, and would doubtless exceed the amount of nitrogen imported. As long ago as 1834, it was estimated that London wasted manure (principally night-soil in the Thames) to the amount of \$2,000,000 per annum. How much London or New York now wastes I am not informed; but all will agree that public health and the interests of agriculture most earnestly demand a thorough sanitary reform of all our cities and towns.—*National Intelligencer*, Washington. Dec. 12, 1855.

ON THE GENERATION OF AMMONIA.

By A. VOGEL, JR.

To obtain ammonia in the gaseous state, its concentrated aqueous solution is usually heated, or else a mixture of sal ammonia with lime. It is evident, that in both cases a very moist gas must be obtained, which, if a dry gas is wanted, has to undergo a drying operation, which is always connected with considerable difficulties. To avoid these, it has been proposed to heat the mixture of sal ammonia and powdered lime in an iron vessel in their dry state. This method has been repeatedly tried by me, when I was convinced that it had no advantage. A considerable temperature is required to completely decompose the sal ammonia, which, in the form of vapor, must be diffused through the lime, and if it is not entirely free of organic substances, the obtained ammonia is empyreumatic. In the following, I give a method entirely different from the former ones, which has been followed for some time for the generation of dry ammonia; it is founded on the observation, that a solution of chloride of calcium in aqua ammonia, boils at a lower point than the pure liquor. Experiments have shown, that liquor ammonia saturated with chloride of calcium, boils at 80° C., (176° F.) and if diluted with an equal volume of water, at 93° C., (199° F.); by addition of more water, the boiling point rises still higher. In this fact we have a means of obtaining gaseous ammonia, at a temperature far below the boiling point of water, of which much less is evaporated than by the boiling of the aqua ammonia. To a concentrated liquor in a proper flask, chloride of calcium in pieces is added until nothing more is taken up. A moderate heat applied by a small spirit lamp immediately causes a quick and regular generation of gas, accompanied—provided the temperature be regulated with care—by very little water, the greater part of which will condense in the receiver, whilst the last traces of water may be removed by passing the gas through a tube, hardly half a foot in length, filled with pieces of caustic potassa. If prepared according to the old methods, even by application of a series of drying tubes, it is difficult or nearly impossible to obtain the gas perfectly free from water.—*Buchner's N. Repert. f. Pharm.*, 1855, 244.

ON THE USE OF ALCOHOL MIXED WITH PYROXYLIC SPIRIT
FOR CERTAIN PHARMACEUTICAL PREPARATIONS.

By J. F. MACFARLAN, of Edinburg.

[Our readers are no doubt generally aware of the difficulties thrown in the way of employing alcohol in Great Britain, by the excessive excise duty imposed on all alcoholic liquors, which has rendered the English manufacturing chemist unable to compete with the foreign chemist in certain articles. Recently, the "Board of Inland Revenue" have granted the right, on taking out a license, to use alcohol after it has been mixed with one-ninth of its weight or bulk of pyroxylic spirit or wood naphtha, which addition, whilst it wholly unfits the alcohol for use as a beverage, does not materially interfere with its employment in the arts as a solvent. This amelioration is attributed to a favorable report by Dr. Hoffman and Profs. Redwood and Graham, to whom the subject was referred by government. It is but natural that pharmacutists should seek to derive their share of benefit from the new measure, and the following remarks on the application of this "Methylated Spirit" in the production of ether and chloroform, which we extract from a long article on the subject in the *Pharmaceutical Journal* for January, 1856, show an attempt in this direction.—EDITOR. *AM. JOUR. PHARM.*]

In the arts, ether has come into very extensive use, especially in the new and beautiful art of photography; and the question is, whether ether, prepared from the methylated spirit, will answer the different purposes for which it has been used equally well with that prepared from pure spirit of wine?

There is no difficulty in the preparation. The same process as is in use for making ether from alcohol suffices to make it from the methylated spirit, and accordingly it has been prepared at our laboratory in the same apparatus, and in the same manner. But when prepared, the question returns, What is it? Is it the ordinary sulphuric ether? does it contain an admixture of methyl ether? and if it does, what effect has that admixture upon it? If an attempt be made to answer the first question by a reference to flavor, it will be difficult to do so, for the flavor does not differ, or differs very slightly indeed, from recently-made ether from alcohol, and the specific gravity may be made quite the same. In appearance and acting there is absolutely no difference. Its solvent powers appear to be the same; and, doubtless, it will be largely employed in all those operations in chemistry and pharmacy in which ether has hitherto been used. Again,

we find that the two ethers closely resemble each other; they belong to the same series of compound radicals, whose general formula is $C_n H_{n+1}$, Methyl being C, H_3 , Ethyl $C_2 H_5$ —and their difference is in the greater volatility of the methyle, which, at a temperature below zero of Fahrenheit, remains a gas, and has resisted a pressure of 20 or 30 atmospheres, while ethyl is easily condensed under the ordinary pressure) and boils at 23° Fahr. (Gregory.) Their ethers in this respect also differ widely. Methylic ether "is a colorless liquid, of a peculiar ethereal smell, and liquid only at a temperature of 22° to 40° ." (Regnault.) Ethylic ether is so well known that it need not be described. Both are obtained by the action of sulphuric acid on their respective alcohols; and when these liquids are previously mixed their ethers may be expected to come ever together, the one being soluble in the other, and, unless in so far as the greater volatility of the one may dispose it to separate from the other, and thus to pass into a state of gas, that union may be permanent. The extreme difficulty which the distinguished chemists who operated on this subject found in separating the two alcohols, and on which, indeed, the whole of the scheme is founded, renders it highly probable that it will be no easy matter to separate their ethers from one another.

As one means, however, of determining whether they are so combined in the ether prepared from the methylated spirit, the boiling point was taken. The boiling point of ordinary sulphuric ether is differently stated, and the first step was to ascertain its boiling point at the different densities of the Edinburgh and London Pharmacopœias, the former being $.735$ at 60° Fahr., the latter $.750$; the boiling point then of the former was ascertained to be 96° as given by Dr. Christison, the latter 98° Fahr.

The boiling point of ether prepared from methylated spirit at these densities was found to be for density, $.735$ at 60° Fahr., 80° ; and for $.750$, 82° ; thus showing that the boiling point of the one is sixteen degrees lower than that of the other, and affording conclusive proof of the presence of methylic ether.

But what change does this make in the quality of the ether? The methylic ether remaining a gas at the ordinary temperature of the atmosphere renders it impossible to ascertain what its properties are in the separate state; but there is no reason to

suppose that they differ much from those of ordinary sulphuric ether. It is polymeric with alcohol for $C_4H_6O_2 = 2(C_2H_3O)$, and is described as being of ethereal odor. The explanation or theory of its production is the same, and its application and uses in the arts may also be the same. Could it be procured in sufficient quantity, it might even be found preferable for many purposes, especially in medicine, as it would necessarily prove a much more diffusible stimulus, and more useful as an antispasmodic.

But thinking it desirable to ascertain this point with some degree of certainty, and whether its internal employment would be perfectly safe, I resolved to try it upon myself. I took the ether as now made from the methylated spirit, and found that its effects were precisely the same as those of the ordinary ether made from alcohol. The dose, as stated by Dr. Christison, is from half a drachm to a drachm, \mathfrak{zss} . to \mathfrak{zj} . Having first taken the ordinary ether from alcohol to ascertain its effects, I took doses of the ether from methylated spirit, varying from \mathfrak{zss} . to \mathfrak{zij} ., and found the effects to correspond so nearly with those of the other as to be unable to note any difference between them; the pulse remained unmoved, about 80, and the flavor given to the breath was precisely that of ether and ether alone; no trace of the ordinary flavor of the pyroxilic spirit was perceptible, and the effects were those of ether alone. The effect of the three-fluid drachm dose was, as might have been expected, more powerful; the pulse was slightly quickened, the heat of the skin a little augmented, and the flavor of the ether in the breath continued for a longer period; but there was no other effect perceptible. There was no pain of the head, no tinnitus aurium, no tendency to nausea, nor any unpleasant symptom whatsoever. Thus, so far as its employment as a remedial agent is concerned, I have no difficulty in affirming that it is quite as safe, and to the full as useful, as ether from alcohol has hitherto been found; though until I had tried it on myself, I could not have spoken of it so decidedly as I now venture to do. In like manner, I have no doubt but that it will be found equally valuable in the arts as the other; the experiments in photography are not yet perhaps sufficiently decisive to determine in what it may be employed and in what it may not; but the great reduction in price renders it

a matter of sufficient importance to call for the utmost attention in examining the subject; and, doubtless, a short time will enable the lovers of this beautiful art to obtain the full benefit of the liberal intentions of the Government.

. Chloroform.—Whatever difficulties or doubts may attend the determination of the fitness of the methylated spirit for the preparation of ether, none remain regarding its employment in the preparation of chloroform. At first, great doubts were entertained as to whether it would be possible to purify the chloroform thus prepared so as to render it fit for use as an anæsthetic agent. No doubt was entertained of the possibility of preparing it; for not only did the chemical composition of the spirit warrant the assurance, but chloroform had been prepared from pyroxilic spirit itself, and it is known that it may be prepared from various other things. The question was, Can it be freed from those oils which contaminate it as entirely as the chloroform made with pure alcohol?

In whatever way chloroform may be prepared, it is a definite compound—a terchloride of formyl. By Dumas' analysis it was found to consist of 2 equiv. of carbon, 1 hydrogen, 3 chlorine, C_2HCl_3 . The materials for this are found both in alcohol and pyroxilic spirit. The latter being $C_2H_4O_2$, the former $C_4H_6O_2$, either of these, when distilled along with water and chloride of lime, supply the materials for chloroform. A definite compound being thus produced, it remains only to see that it is purified so as to render it safe for employment on the human frame. The vast amount of benefit that has been conferred on suffering humanity specially demands this attention in the preparation; and had it been found impossible so to purify it, nothing would have justified the use of the methylated spirit; alcohol alone would have had to be employed. But it has been so purified, and the specimen now on the table will bear the closest examination. The chief impurity to be guarded against is the presence of sundry oils formed in the process, and which rise along with it in the first distillation. These can be detected in two ways: 1st, by the action of sulphuric acid, and 2dly, by the flavor. As to these, Muspratt says: "The rectified product should not tinge oil of vitriol when shaken with it, unless in a very trifling degree. If it colors the acid strongly, or, if when evaporated on the palm

of the hand, it leaves an unpleasant odor, it is not fit for use." A still finer test of the flavor may be found in the employment of white bibulous paper; a little may be poured upon a piece of it, and its flavor watched until it evaporates so as to leave the paper dry. If the flavor continues the same throughout, the proof is complete that it is pure, for the oils referred to are more persistent than the chloroform, and when it has evaporated, their odor, if present, will display itself. The chloroform prepared from the methylated spirit stands these tests as well as that prepared from alcohol alone. Its specific gravity may also be referred to. "The rectified chloroform should have the specific gravity 1.49 to 1.50." (Gregory.) That from the methylated spirit has the specific gravity 1.50 at the temperature of 60° Fahr. It is necessary to mention this, for it has happened that some have tried the gravity without paying any attention to the temperature, and expected to find it exactly the same in the dog days as in the most intense frost. Chloroform from methylated spirit will be found to stand this test also quite as well as that from alcohol; and any chloroform found much under 1500 at 60° Fahr. should be rejected as in some way contaminated. But nothing is so important as the application of the article in medicine and surgery, and it is very satisfactory to be able to say that the chloroform thus prepared has been found equally effectual and equally safe with that prepared from alcohol alone. Nothing was wanting but this test, and this has been applied so as to leave no doubt whatever regarding it. It has been used in many cases, and its effects found not to differ in any way from those of chloroform prepared from alcohol alone. I need only, however, say that it has been used in the Royal Infirmary, under the eye of Professor Syme. In a recent operation of a protracted nature, in a case of necrosis, it was applied with entire success, and to-day I had an opportunity of witnessing the operation of excision of the shoulder-joint performed in the theatre of the hospital by that accomplished surgeon. The operation was performed in his usual dexterous manner and promises a perfect cure, and to witness the patient, a young woman, lying unmoved on the operating table, entirely unconscious of the progress of the surgeon's knife, and in a state of as calm and quiet repose as if she had been merely enjoying a refreshing sleep, was a

gratifying sight, exhibiting not merely the blessing conferred on suffering humanity by the use of chloroform, and the gratitude due to Professor Simpson on that account, but in this particular case satisfactorily proving that chloroform prepared from "methylated spirit" is as effectual, as safe and as readily applied as that prepared from spirit of wine alone. Indeed, the learned Professor stated that he would give it the preference, inasmuch as it seemed to produce its effects more readily even than the other.

Thus we have another pleasing result of the liberality of the Government in this matter, as the British manufacturer is now placed on an equal footing with the foreign, the necessity for protecting duties done away, and the price greatly reduced to the public.

Spiritus Etheris Nitrosi should now occupy attention, but the length of the preceding remarks compel a postponement to a future opportunity.

Mr. Macfarlan then presented specimens of ether and chloroform prepared from the methylated spirit.—*Trans. North Brit. Pharm. Society, in London Pharm. Jour.*, January 1, 1856.

ON AMYLIC ALCOHOL.

By L. PASTEUR.

Crude amylic alcohol consists for the most part of two chemically similar bodies, which however are distinct. The atoms in the one have a different arrangement from those of the other. One is active in polarized light, the other passive.

The compounds of active amylic alcohol are all active, those of the inactive are also inactive. The proportions in which the two kinds occur together varies according to the mode of preparation of the alcohol. The crude oil produced by the fermentation of the juice of beet-root contains one-third of the active and two-thirds of the inactive alcohol; the crude oil from the fermentative of molasses consists of the two alcohols in nearly equal proportions. The two alcohols cannot be separated by distillation; the author prepared them for the sulphamylate of baryta. A very large quantity of this salt is prepared from the crude oil. The purified crystals exhibit no difference in appearance or chemical composition, but it is soon seen that a portion of them dissolves

2½ times as easily as the other. The most readily soluble portion contains the compound of the active alcohol, which, when prepared from this compound, rotates the plane of polarization about 20° to the left in a cylinder of 50 centims. in height, whilst that prepared from the less soluble baryta-salt possesses no rotatory power.

These two alcohols are extremely interesting, because we may treat one in the same way as the other, without producing any essential difference. The author has found a difference in the specific gravity. The active alcohol is about one-hundredth heavier than the other. From this it follows that an equal volume of the two bodies cannot contain the same number of atoms. The active boils at 260°.6 to 262°.4 F., the inactive at 264°.2 F. Mixtures of the two boil at intermediate temperatures.

The separation of the two baryta-salts only requires 15 to 20 recrystallizations. The salt of the active alcohol is concentrated in the mother-liquor. The difficulties of the separation lie entirely in the isomorphism of the two salts. Hence the two salts unite in all proportions, and it is only the great difference in their solubility that causes their separation. This isomorphism is exceedingly deserving of notice, because it proves that a dissymmetry may be present and not present in the molecular state of two salts, whilst *à priori* we should conclude that this would constitute an insuperable barrier to the union of the molecules of two salts, so as to crystallize together. The author long supposed that he had to do with two completely different salts of sulphamate of baryta, until he convinced himself that it was otherwise. *Chem. Gaz. from Comptes Rendus.*

ON SOME SACCHARINE SUBSTANCES.

By M. BERTHELOT.

1. The Australian manna (Manna of the Eucalyptus) contains a crystallizable sugar, which was prepared in 1843 by Johnston, and regarded by him as grape-sugar, $C^{12}H^{12}O^{12} + 2HO$. According to Berthelot's experiments, this is a peculiar kind of sugar, for which he proposes the name of *melitose*.

The reactions of this body agree for the most part with those of cane-sugar. It appears to consist of two isomeric bodies, of

which one is capable, and the other incapable of fermentation; the latter must be placed near sorbine.

Melitose, as extracted by water from Australian manna, crystallizes in extremely fine needles; it is about as soluble as mannite, and has a slight sweet taste. It rotates the plane of polarization to the right; its rotatory power (with reference to the transition-color) is $(\alpha)_D^{20} = +88^\circ$. It is therefore about one-fourth greater than that of cane-sugar. When crystallized at the ordinary temperature, melitose has the formula $C^{12}H^{12}O^{12} + 2HO$. At $212^\circ F.$ it becomes semifluid, and loses 1 atom of water. At $266^\circ F.$ it loses a fresh quantity of water; at a higher temperature it undergoes a change and becomes yellow, and at still higher one it diffuses the odor of caramel. When kept at $392^\circ F.$ with muriatic acid for a long time, it is converted into a blackish-brown mass. When heated with baryta for some hours to $212^\circ F.$, it does not acquire color, and retains its characteristic properties. Melitose does not reduce the copper from the solution of potash and oxide of copper; it only acquires this property by boiling with sulphuric acid. By this means it also loses about a third of its rotatory polarizing power, and when isolated it is uncrystallizable.

In contact with yeast it furnishes alcohol and carbonic acid. Melitose, boiled with sulphuric acid and with baryta at $212^\circ F.$, also possesses this property. All these properties agree very closely with those of cane-sugar. But during fermentation 100 parts of melitose, $C^{12}H^{12}O^{12} + 2HO$, only furnish 22.2 parts of carbonic acid; 100 parts of grape-sugar, $C^{12}H^{12}O^{12} + 2HO$, give 44.5 parts of carbonic acid, or double the quantity. The fermented fluid contains a saccharine body, which is not acted upon in fermentation. This the author calls,—

Eucalyne.—Its composition, dried at $212^\circ F.$, is $C^{12}H^{12}O^{12}$. Treatment with sulphuric acid does not render this body capable of fermentation. Melitose furnishes exactly half its weight of eucalyne, as proved by direct experiment. Perhaps also treatment with sulphuric acid only converts half the melitose into the sugar which reduces the copper in the test-fluid.

2. *Pinite*.—The author has received a sugar from M. Bourcier de la Rivière, from California. It is said to be derived from *Pinus Lambertiana*. It collects in concrete masses in hollows

in the trees, produced by the Indians by the application of fire to the foot of the tree. The Indians eat this sugar.

The author extracted a crystallizable matter by means of water from the crude substance. This he calls *pinite*. Its composition is $C^{12}H^{12}O^{10}$. It tastes nearly as sweet as sugar-candy. It is readily soluble in water, and nearly insoluble in absolute alcohol, but dissolves a little in boiling ordinary alcohol. Its specific gravity = 1.52. Its right rotation is $(\alpha)_D = +58^{\circ}.6$ (with reference to the transition-color.) Pinite does not reduce the oxide of copper in solution of oxide of copper and potash, even after treatment with sulphuric acid. When precipitated with ammoniacal solution of acetate of lead, it furnishes a compound of the formula $C^{12}H^{12}O^{10} + 4PbO$. It is consequently isomeric with quercite, and is distinguished from that sugar by its crystalline form, its stronger sweet taste, and its great solubility. It is not capable of fermentation.

3. *Sugar from Cider*.—The author has extracted from certain ciders a crystallizable sugar, which is isomeric with mannite. With regard to its crystallization and solubility, it is also identical with mannite.—*Ibid*, from *Comptes Rendus*, September 1855.

REMARKS ON UNTINNED COPPER VESSELS.

By M. VASEY, Pharmacien of Luneville.

M. Vasey recently made an extract of the leaves of elder with the expressed, non-purified juice of the leaves according to the process of Storck of Vienna. He operated in a red copper vessel which was untinned, and perfectly free from rust. The liquid on commencing to boil was agitated with a clean iron spatula to avert the ebullition. After a few moments on withdrawing the spatula, he was surprised to see it covered with a layer of copper. At first he could not account for this result. He cleaned the spatula and again agitated the liquid with it, but this time instead of copper it was covered with a black layer, resulting probably, from the reaction of the tannin with the iron; several repetitions of this trial with a clean spatula showed no trace of copper.

M. Vasey explains this phenomenon by assuming that a part of the carbonic acid existing in the juice acted on the copper to

form carbonate, which salt was retained in solution by the rest of the carbonic acid until driven off by ebullition. The small quantity of cupreous salt is decomposed by the bright iron spatula. It follows from this that it is not proper to treat the juice of any plant in an untinned copper vessel, especially if an iron spatula is used.—*Repertoire de Pharmacie*, Aout. 1855.

ON WOOD OIL, A SUBSTITUTE FOR COPAIBA.

By DANIEL HANBURY.

Among the drugs that have recently appeared in the London market, I have observed one article to which I am desirous of drawing attention. It is a liquid imported in considerable quantity from Moulmein in Burmah, and offered for sale under the name of *Balsam Capivi*, but known in India as *Wood Oil* or *Gurjun Balsam*.

To Balsam of Copaiba, however, it presents so remarkable a resemblance, that, but for the locality from which it was imported, it would hardly have been noticed as anything else than Copaiba of rather unusually dark color.

In the Paris Universal Exhibition there are two samples of a similar liquid, labelled *Wood Oil*, one of them being sent among the *Materia Medica* of Canara, the other from the Tenasserim provinces. Through the kindness of Mr. Royle, specimens of each have been placed at my disposal. Though comparatively a new drug in English trade, *Wood Oil* is an article of common occurrence in the bazaars of India.

From its similarity to Copaiba, it might be supposed to have its origin in some plant nearly allied to *Copaifera*: such, however, is not the case, it being the produce of the natural order *Dipterocarpaceæ*.

The following is Roxburgh's account of the manner of obtaining it from *Dipterocarpus turbinatus*, an immense tree, native of Chittagong, Tipperah, Pegue, and other places to the eastward of Bengal.*

"This tree is famous over all the Eastern parts of India and the Malay

* *Flora Indica* (ed. Carey) vol ii. p. 613.

Islands, on account of its yielding a thin liquid balsam, commonly called *Wood Oil*, which is much used in painting ships, houses, &c.

"To procure the balsam, a large notch is cut into the trunk of the tree, near the earth, (say about 30 inches from the ground), where a fire is kept up until the wound is charred, soon after which the liquid begins to ooze out. A small gutter is cut in the wood to conduct the liquid into a vessel placed to receive it. The average produce of the best trees during the season, is said to be sometimes 40 gallons. It is found necessary, every 3 or 4 weeks, to cut off the old charred surfaces and burn it afresh; in large healthy trees abounding in balsam, they even cut a second notch in some other part of the tree, and char it as the first.

"These operations are performed during the months of November, December, January and February. Should any of the trees appear sickly the following season, one or more years' respite is given them."

The same author also states that Wood Oil is afforded by *D. costatus* (*D. angustifolius* W. et A.), *D. alatus* Roxb. and *D. incanus* Roxb., the last mentioned being reputed to furnish the largest proportion of the best sort.

Closely allied to the Wood Oil of *Dipterocarpus* is the oleo-resin termed *Camphor Oil*, produced by *Dryobalanops Camphora* Colebr., a tree of the same natural order. For a specimen of this oleo-resin and of an analogous liquid called *Lagam Oil*, both brought from Sumatra by Dr. Junghuhn, I am indebted to the courtesy of Dr. J. E. De Vrij of Rotterdam.

Wood Oil, as imported from Moulmein, is, after filtration, a transparent dark brown liquid, of somewhat greater consistence than Olive Oil, sp. gr. of .964 and an odor and taste like copaiba, though perhaps hardly so strong. One part of it treated with two parts of alcohol sp. gr. .796, is dissolved, with the exception of a minute quantity of darkish flocculent matter, which subsides upon repose.

But its most curious property (as noticed by Mr. Charles Lowe with reference to a liquid which I suppose to have been *Wood Oil**) is that exhibited when it is heated in a *corked* vial to about 266° F. (130° C.†). Thus treated it becomes slightly turbid, and so gelatinous that the vial may be inverted, even

* On a new variety of Balsam of Copaiba—*Pharmaceutical Journal*, vol. xiv. pp. 65, 66.

† Mr. Lowe says 230° F., but a much more striking effect is produced on the *Wood Oil* by the temperature I have named.

while hot, without its contents being displaced; and on cooling, the solidification is still more complete. Gentle warmth and agitation restore to a great extent its fluidity, but solidification is again produced upon the liquid being heated to 266°. Copaiba displays no such phenomenon.

According to Dr. O'Shaughnessy, when Wood Oil is heated in a retort, a yellowish white, *crystallizable*, solid substance, having many of the properties of benzoic acid, sublimes into the upper part of the vessel, to the extent of about one per cent. of the Wood Oil taken. In my own experiments, I have not detected any of this substance. It is true that when Wood Oil is heated, a scanty, opaque white sublimate condenses in the cooler part of the vessel, but this appears to arise from the condensation of a little water among the minute drops of essential oil, since it is not produced if the Wood Oil has been previously agitated with some fragments of dried chloride of calcium.

With regard to its medicinal properties, there appears to be no doubt, from an extensive set of experiments instituted by Dr. O'Shaughnessy, confirmed by trials made by other practitioners in India, that Wood Oil is nearly equally efficient with Copaiba, in the diseases in which that drug is indicated.† It may be administered as an emulsion, or in pills made up with magnesia. Dr. O'Shaughnessy has used the essential oil in doses of from 10 to 30 drops.

From the close similarity of Wood Oil to Copaiba, a mixture of the two may be anticipated; from pure Copaiba, such a mixture will probably be detected by a difference in its optical properties.—*Pharm Jour.* Jan. 1, 1856.

THE PREPARATION OF BLUE PILL AND GREY POWDER.

By W. W. STODDART.

The preparation of these two most important articles, when the directions of the Pharmacopœia are strictly followed, is a very tedious process, so much so, that most druggists generally order them from a wholesale house, not thinking it worth their

† *Bengal Dispensatory* (1842), pp. 222-224.

while to compound their own. Now that a new Pharmacopœia is under consideration, and every one expected to give a hint or two if possible, I am induced to give my mode of manipulation, as I am not aware of its being followed by any one else. A most intimate and perfect division of the metal is effected in a very short time and with comparatively little trouble,—and with this recommendation, that the ingredients are in every respect the same as the Pharmacopœia formula.

Pil. Hydrarg.—To make this I triturate the mercury with the powdered liquorice (adding a small quantity of distilled or rose water) till the globules are quite imperceptible, the confection of roses is next added and all well mixed. The rapidity with which the liquorice “kills” the mercury is really astonishing to one accustomed to the old way of rubbing the metal with the conserve. It forms a perfectly homogeneous mass of a proper pill consistence.

Hydrarg. cum Creta.—For mixing this, I first put the mercury into a bottle with an equal weight of prepared chalk, and well shake them together till the metal is invisible to the naked eye, which takes place in a few minutes. I then turn it out into a large Wedgwood mortar and rub with the remainder of the chalk till the globules are no longer visible. The time consumed by these modes of operation is so short, that there can be no excuse for any one not preparing their own blue pill and grey powder, which it is obviously their duty to do, especially in a more exclusively dispensing establishment. A pound of blue pill was made as above in one hour, in which no globules were discoverable, even by a Coddington lens.

9, North Street, Bristol, Nov. 19, 1855.

[The process for making grey powder is similar to that now generally adopted by wholesale druggists, the mercury and chalk being put into a cask which is turned on an axis.—ED.]—*Lond. Pharm. Jour.* Jan. 1, 1856.

ON THE PRODUCTION OF PALMITIC ACID FROM THE MAFURRA TALLOW.

By MM. D'OLIVEIRA PIMENTEL AND J. BOUIS.

The inhabitants of Mozambique give the name of Mafurra tallow to a fatty matter, which they extract by means of hot water from the seed of a fruit which is but little known in Europe. The simple and economical extraction of this vegetable tallow causes it to be used in the preparation of a common soap. The almonds of Mafurra, or probably Mafutra, are covered by a light red envelope, with a black spot in the middle. Each almond weighs about 0.660 grm.; the least pressure is sufficient to detach the envelope, which weighs 0.187 grm.; so that the decorticated seed weighs about 0.473 grm. The seeds are about the size of a small cacao-bean; they are flat on the inside and convex externally, and they divide easily into two parts in a longitudinal direction.

Their taste is very bitter, and the different products obtained from them obstinately retain this bitterness. The almond is hard, and when bruised exhales the characteristic odor of cacao; pressure only extracts a very minute proportion of fatty matter from it, and it is necessary to have recourse to boiling water or to solvents in order to extract the whole. The employment of ether or benzine has shown that 65 per cent. of fatty matters may be obtained from the husked seeds, and the cake, which is fit for manure, contains 4.3 per cent. of nitrogen.

With different agents the seeds furnish an extractive matter, a very bitter substance, a product which is strongly colored by alkalies, &c. The color of the fatty matter is yellowish, and its odor is that of cacao-butter; it is less fusible than tallow, and boiling alcohol dissolves it in very small quantity. Hot ether dissolves it readily, and deposits it on cooling in small stellate crystals. The alkalies saponify it with a very distinct brown color, but the greater part of the coloring matter is carried into the alkaline solution. Oxide of lead also converts it into soap, and the glycerine produced by this operation does not exhibit its saccharine character until it has been sufficiently agitated with ether, which removes the bitter matter. The fatty acids arising from the decomposition of the alkaline soaps are crystallized,

and composed of a highly-colored liquid acid, and a solid acid which constitutes 0.55 of the total weight.

The liquid acid forms a mass under the influence of hyponitrous acid, and furnishes a product analogous to elaidic acid; by dry distillation it decomposed into carburets of hydrogen and sebacic acid; with oxide of lead it forms a salt which is soluble in ether, in fact it possesses all the characters of oleic acid.

The solid acid, when pure, is perfectly white and sparkling; its point of solidification is permanent at 320.9 F., and it then forms a crystalline friable mass; its alcoholic solutions form a mass on cooling. This acid furnishes an ammoniacal salt, which is soluble with the assistance of heat, but insoluble in the cold; its nacreous potash and soda-salts are decomposed by water; its lead-salt fuses at about 229° F., and afterwards sets into an opaque amorphous mass. The ether which it forms with alcohol is fusible at 75°.2 F., &c. These appear to be all the properties of the ethalic or palmitic acid indicated by MM. Dumas and Stas. Analyses of the acid, of the ether, and of the lead- and silver-salts, showed the composition of the acid to be $C^{32}H^{52}O^4$.

Thus palmitine is furnished in abundance by palm-oil and the Mafurra tallow, the only two vegetable substances which contain it; for we cannot take into the account the grains of coffee, which, according to M. Rochleder, contain it in small proportion.

Experiments of another kind have shown us the extreme facility with which Mafurra tallow is distilled after saponification with sulphuric acid.

This fatty matter, treated with lime like common tallow, and submitted to cold and hot presses, gave excellent results; but we think that the preference should be given to the former method, unless we can succeed in obtaining the tallow free from coloring matter.

The Mafurra seed is very abundant, and easily collected, in Mozambique, Madagascar and the Isle of Bourbon, which is not unimportant, especially at a moment when the principal substances for lighting are at such a high price. The Mafurra tallow is undoubtedly far superior to palm-oil, both for working and for the amount of solid matter which it yields.—*Chem. Gaz. from Comptes Rendus*, Oct. 29, 1855.

PROCESS FOR THE FORMATION OF A VERY SOLID CEMENT BY
THE ACTION OF A CHLORIDE UPON OXIDE OF ZINC.

By M. SOREL.

This cement is a basic oxychloride of zinc. It is obtained by suspending oxide of zinc in the liquid chloride of the same metal, or in another chloride isomorphous with chloride of zinc, as in protochloride of iron, manganese, nickel, cobalt, &c. These chlorides may be replaced by muriatic acid.

The cement will be harder in proportion as the chloride is more concentrated and the oxide of zinc heavier. The washed residues of the manufacture of zinc-white, or common zinc-white calcined at a red heat, may be employed; the chloride of zinc should mark from 50° to 60° of Beaumé's areometer. To cause the cement to set more slowly, about 3 per cent. of borax or muriate of ammonia may be dissolved in the chloride, or the oxide may be suspended in water containing a little borax, and afterwards calcined.

The cement thus obtained may be poured into moulds like plaster; it is as hard as marble; cold, moisture, and even boiling water, have no effect upon it; it resists a heat of 572° F. without disaggregation, and the most energetic acids attack it very slowly. It is not dear, but its cost might be considerably reduced by mixing metallic, siliceous, or calcareous substances with the oxide of zinc, such as iron or brass filings, iron pyrites, blende, emery, granite, marble, and any of the hard limestones. Soft materials, such as chalk and the ochres, would not do. It will readily receive the brightest and most various colors, so as to be applicable to the formation of mosaics, and other works of great hardness and beauty; some mosaics made of it are already placed in the church of St. Etienne-du-Mont in Paris. It may also be employed in forming moulded objects, such as statuettes, medallions, bas-reliefs, &c. It answers admirably for a cement, and has been employed for several years by some of the Parisian dentists in stopping decayed teeth.

It may be used instead of oil in painting buildings. For this purpose, pure or colored oxide of zinc is suspended in water and a little size; this is applied in the same way as the ordinary size-colors, and when as many layers as are desired have been laid

on, and the last coat is dry, a little chloride of zinc, of 25° to 30° (Beaumé,) is applied with a brush. It may then be pumiced and varnished like oil-paint. This painting is very solid and inodorous; it dries instantaneously, and has the advantage of being antiseptic by virtue of the chloride of zinc.—*Ibid*, from *Comptes Rendus*.

A NEW PROCESS FOR ISOLATING BRYONIN, COLOCYNTHIN,
AND ANALOGOUS PRINCIPLES.

By M. EMILE MOUCHON.

Extraction of Bryonin.

Take of Bryony root in fine powder, 250 parts.
“ Animal charcoal in fine powder, well
purified, washed and dried, 125 “

Mix the bryony intimately with half of the animal charcoal, and introduce it into a conical percolator, containing the other half of the charcoal, and proceed by displacement with 500 parts of alcohol of 95 per cent., and afterwards by 225 parts of alcohol of 56° per cent. and this again by sufficient water to displace completely the first menstruum.

In this way a light, lemon-colored tincture is obtained, strongly charged with the bitter principle of the bryony, and so active that eight drops, when taken by the author, produced a decided purgative effect.

By spontaneous evaporation in flat capsules, a second product is obtained of a light yellowish color, having an extreme bitterness, soluble in water and alcohol, insoluble in sulphuric ether, unalterable by the alkalies as well as by chlorine, soluble in sulphuric acid with the production of a blue color, etc. It is colored green with disengagement of ammonia by heat, is precipitated white by nitrate of silver, sub-acetate of lead and protonitrate of mercury, &c., and in fact, behaves just as the pure bryonin, resulting from the processes of Brandes and Dulong.

The yield is about a sixteenth of the bryony employed. It purges more or less powerfully, according as it is taken, in the liquid form or in pills, two grains in the liquid form having produced four evacuations.

Extraction of Colocynthin.

Take of Colocynth in very fine powder, 125 parts.
“ Purified animal charcoal, 60 “

Proceed as directed for bryonin, until 250 parts of concentrated alcoholic tincture is obtained.

Evaporate this spontaneously in flat dishes to perfect dryness. The product is friable and pulverizable; it is garnet colored, its bitterness is insupportable, its solubility in water and alcohol is like that of bryonin, and like the latter, insoluble in ether, Liebig's statement to the contrary notwithstanding.

The purgative property of this colocynthin is a little more active than that of bryonin, from the author's experience, as in a vigorous adult, it purged strongly in a dose of 10 centigrammes ($1\frac{1}{2}$ grains), especially when in the liquid form; and for children from $2\frac{1}{2}$ to 5 centigrammes ($\frac{3}{8}$ to $\frac{1}{4}$ of a grain).

If it is desirable to have these principles in a state of great purity, the above described product should be dissolved in strong alcohol, and treated with a little animal charcoal, which removes a minute quantity of foreign matter; but this purification is unnecessary in a medical point of view.

Colocynth loses four-fifths of its weight by being deprived of its seeds, it being necessary to take 20 ounces of the fruit to get four ounces of the powder.

Colocynthin constitutes exactly a thirty-second part of the entire fruit, or about half an ounce to the pound, *av.*

M. Mouchon believes, that in the form presented by his process, these principles are destined to play an important part in the therapeutics of these drugs, and he believes, that by carrying out his process with gentian, centaury, wormwood, menyanthes, columbo, holly, etc., that the several principles which give them bitterness and activity, may be rendered equally available.
—*Repertoire de Pharmacie*, Nov., 1855.

ON A SIMPLE MEANS OF MAKING LABELS FOR VESSELS TO BE KEPT IN THE CELLAR, WHICH ARE NOT ALTERABLE BY DAMP.

By MR. T. A. QUEVENNE.

Most pharmacutists use labels painted in oil colors, which is very well, some varnish the labels, and some use a paste contain-

ing corrosive sublimate. These last plans have their advantages, but are, I believe, inferior to the following, which is recommended for its simplicity and readiness.

In place of paper, take a little band of adhesive plaster, write on its back as though it were paper. If the plaster is soft, the band will stick without heating, otherwise it should be gently heated; and the durability of the label is augmented when the plaster by this means is made to penetrate the material upon which it is spread.

I presented to the Society of Pharmacy on the 6th of June, 1855, several specimens, which had been in the cellar since the 1st of June, 1851, without being disturbed. Though covered with mould, this was readily removed by a brush, and the writing left perfectly legible.

A label of this kind was kept under water without the tissue being altered, although it is loosened and the writing rendered paler. The latter inconvenience is overcome by using, in place of ordinary ink, a varnish colored with Chinese vermilion. The use of these labels is not new, as they have been in use in the hospitals for ten years past.—*Repertoire de Pharm.* July, 1855.

ON PAPYRUS, BONAPARTEA, AND OTHER PLANTS WHICH CAN FURNISH FIBRE FOR PAPER PULP:

By CHEVALIER DE CLAUSSEN.

The paper-makers are in want of a material to replace rags in the manufacture of paper, and I have therefore turned my attention to this subject, the result of which I will communicate to the Association. To make this matter more comprehensible, I will explain what the paper-makers want. They require a cheap material, with a strong fibre, easily bleached, and of which an unlimited supply may be obtained. I will now enumerate a few of the different substances which I have examined for the purpose of discovering a proper substitute for rags. Rags containing about 50 per cent. of vegetable fibre mixed with wool or silk are regarded by the paper makers as useless to them, and several thousand tons are yearly burned in the manufacture of prussiate of potash. By a simple process, which consists in boiling these

rags in caustic alkali, the animal fibre is dissolved, and the vegetable fibre is available for the manufacture of white paper pulp. Surat, or Jute, the inner bark of *Cochorus indicus*, produces a paper pulp of inferior quality bleached with difficulty. Agave, *Phormium tenax*, and Banana or plantain fibre (Manilla hemp) are not only expensive, but it is nearly impossible to bleach them. The Banana leaves contain forty per cent. of fibre. Flax would be suitable to replace rags in paper manufacture, but the high price and scarcity of it, caused partly by the war, and partly by the injudicious way in which it is cultivated, prevents that. Six tons of flax straw are required to produce one ton of flax fibre, and by the present mode of treatment all the woody part is lost. By my process, the bulk of flax straw is lessened by partial clearing before retting, whereby about 50 to 60 per cent. of shoves (a most valuable cattle food) are saved, and the cost of the fibre reduced. By the foregoing it will be seen that the flax plant only produces from 12 to 15 per cent. of paper pulp. All that I have said about flax is applicable to hemp, which produces 25 per cent. of paper pulp. Nettles produce 25 per cent. of a very beautiful and easily-bleached fibre. Palm-leaves contain 30 to 40 per cent. fibre, but are not easily bleached. The Bromeliacæ contain from 25 to 40 per cent. fibre. *Bonaparteia juncoidea* contains 35 per cent. of the most beautiful vegetable fibre known; it could not only be used for paper pulp, but for all kinds of manufactures in which flax, cotton, silk, or wool are employed. It appears that this plant exists in large quantities in Australia, and it is most desirable that some of our large manufacturers should import a quantity of it. The plant wants no other preparation than cutting, drying, and compressing like hay. The bleaching and finishing it may be done here. Ferns give 20 to 25 per cent. fibre, not easily bleached. Equisetum from 15 to 20 per cent. inferior fibre, not easily bleached. The inner bark of the lime-tree (*Tilia*) gives a fibre easily bleached, but not very strong. Althea and many Malvaceæ produce from 15 to 20 per cent. paper pulp. Stalks of beans, peas, hops, buckwheat, potatoes, heather, broom, and many other plants contain from 10 to 20 per cent. of fibre—but their extraction and bleaching present difficulties which will probably prevent their use. The straws of the Cereales cannot

be converted into white paper pulp after they have ripened the grain, the joints or knots in the stalks are then so hardened that they will resist all bleaching agents. To produce paper pulp from them, they must be cut green before the grain appears, and this would probably not be advantageous. Many grasses contain from 30 to 50 per cent. of fibre, not very strong, but easily bleached. Of indigenous grasses, the Rye grass contains 35 per cent. of paper pulp., the Phalaris 30 per cent., *Arrhenatherum* 30 per cent., *Dactylis* 30 per cent., and *Carex* 30 per cent. Several reeds and canes contain from 30 to 50 per cent. of fibre, easily bleached. The stalk of the sugar-cane gives 40 per cent. of white paper pulp. The wood of the Coniferæ gives a fibre suitable for paper pulp. I made this discovery accidentally in 1851, when I was making flax cotton in my model establishment at Stepney, near London. I remarked that the pine-wood vats in which I bleached, were rapidly decomposed on the surface into a kind of paper pulp. I collected some, and exhibited it in the Great Exhibition—but as at that time there was no want of paper material, no attention was paid to it. The leaves and top branches of Scotch fir produce 25 per cent. of paper pulp. The shavings and saw dust of wood from Scotch fir gives 40 per cent. pulp. The cost of reducing to pulp and bleaching pine-wood, will be about three times that of bleaching rags. As none of the above-named substances or plants would entirely satisfy on all points the wants of the paper-makers, I continued my researches, and at last remembered the papyrus (the plant of which the ancients made their paper), which I examined, and found to contain about 40 per cent. of strong fibre, excellent for paper, and very easily bleached. The only point which was not entirely satisfactory, was relative to the abundant supply of it, as this plant is only found in Egypt. I directed, therefore, my attention to plants growing in this country; and I found, to my great satisfaction, that the common rushes (*Juncus effusus*, and others) contain 40 per cent. of fibre, quite equal, if not superior to the papyrus fibre, and a perfect substitute for rags in the manufacture of paper, and that one ton of rushes contains more fibre than two tons of flax straw.—*Pharm. Journ.*, Nov., 1855.

ON THE HANCORNIA SPECIOSA, ARTIFICIAL GUTTA PERCHA,
AND INDIA-RUBBER.

By CHEVALIER DE CLAUSSEN.

In the course of my travels as botanist in South America, I had occasion to examine the different trees which produce the india-rubber, and of which the *Hancornia speciosa* is one. It grows on the high plateaux of South America, between the tenth and twentieth degrees of latitude south, at a height from three to five thousand feet above the level of the sea. It is of the family of the Sapotaceæ, the same to which belongs the tree which produces gutta percha. It bears a fruit, in form not unlike a bergamot pear, and full of milky juice, which is liquid india-rubber. To be eatable, this fruit must be kept two or three weeks after being gathered, in which time, all the india-rubber disappears, or is converted into sugar, and is then in taste one of the most delicious fruits known, and regarded by the Brazilians (who call it Mangava) as superior to all other fruits of their country. The change of india-rubber into sugar, led me to suppose that gutta percha, india-rubber, and similar compounds contained starch. I have therefore tried to mix it with resinous or oily substances, in combination with tannin, and have succeeded in making compounds which can be mixed in all proportions with gutta percha or india-rubber without altering their characters. By the foregoing it will be understood, that a great number of compounds of the gutta percha and india-rubber class may be formed by mixing starch, gluten, or flour with tanning and resinous or oily substances. By mixing some of these compounds with gutta percha or india-rubber, I can so increase its hardness that it will be like horn, and may be used as shields to protect the soldiers from the effect of the Minié balls, and I have also no doubt that some of these compounds, in combination with iron, may be useful in floating batteries and many other purposes, such as the covering the electric telegraph wires, imitation of wood, ship-building, &c. —*Ibid.*

ON THE PREPARATION AND PURIFICATION OF HIPPURIC ACID AND ITS COMPOUND WITH OXIDE OF ZINC.

By D. J. LÖWE.

In order to obtain hippuric acid directly from the urine, the author mixes fresh urine with an excess of sulphate of zinc, and evaporates it, together with the precipitate of phosphate and basic carbonate of zinc produced by the addition of the zinc-salt, to one-sixth or one-eighth of the original volume. This is quickly filtered; the precipitate is washed on the filter with a little hot water, and the filtrate decomposed by means of dilute sulphuric or muriatic acid. After this operation, the entire fluid solidifies into a white jelly of hippuric acid, in a state of purity which is not obtained by any other known method. It is collected upon a filter, and washed with cold water as long as the drops passing are of a yellowish color; it is afterwards dried by pressing between several folds of blotting-paper. By this process all that is necessary to obtain the acid in large crystals, is to recrystallize it. As it is not always possible to obtain large quantities of fresh urine, it is advisable, especially in the hot season, to pour it into tall vessels of stone-ware, into which a sufficient quantity of a solution of sulphate of zinc in water, or dilute muriatic acid, has been previously put.

To purify a colored hippuric acid, we may avail ourselves of its behaviour towards metallic zinc, which is cut into small pieces, and boiled with the solution of the acid. The metal is strongly attacked with evolution of hydrogen. The solution acquires a slight yellowish color, and when the salt is completely formed, it solidifies on cooling into a thick crystalline jelly. If towards the close of the operation, when the metallic zinc is but faintly attacked, a little freshly-calcined animal charcoal be added to the boiling fluid, and this is then filtered, and the filtrate allowed to run into dilute sulphuric or muriatic acid, the hippuric acid separates in beautiful white crystals. It is only when a considerable portion of the acid remains uncombined, that it still retains a slight yellowish color after the precipitation.

When the quantity of acid to be purified is considerable, this operation is rather tedious, even when a small addition of an electro-negative metal (such as platinum or lead) has been made

to the zinc. With large quantities the acid is dissolved in as little water as possible, and neutralized with carbonate of soda; to this solution a slight excess of pure sulphate of zinc is added, and it is then boiled for a short time with animal charcoal, and filtered into a dilute muriatic acid, by which the hippuric acid is separated in colorless crystals. A slight excess of carbonate of soda is not injurious; on the contrary, the basic carbonate of zinc holds a portion of the coloring matter, and consequently facilitates the decolorization.

Hippurate of Zinc, which is formed on the addition of sulphate or chloride of zinc to the solution of a hippurate, or by the boiling of metallic zinc with an aqueous solution of hippuric acid, has the formula $C^{18}H^8NO^6$, $ZnO + 5HO$. It is soluble in 53.16 parts of water, and in 60.5 parts of alcohol of spec. grav. 0.82 at the temperature of $63^{\circ}.5 F.$, and in 4 parts of boiling water. In boiling alcohol it dissolves still more readily. Cold and boiling ether scarcely dissolve it. At a high temperature it melts, and like free hippuric acid, when submitted to dry distillation, first acquires a red, and afterwards a black color; and lastly, when long exposed to a red heat, it is completely decomposed, giving off aromatic vapors of nitrobenzole, and leaving ashes of oxide of zinc.—*Chem. Gaz.*, Oct. 15, 1855, from *Journ. für Prakt. Chem.*, lxx. p. 369.

ON A PROCESS FOR OBTAINING LITHOGRAPHS BY THE
PHOTOGRAPH PROCESS.

By PROFESSOR RAMSEY.

Professor Ramsey described a process by which Mr. Robert M'Pherson, of Rome, had succeeded in obtaining beautiful lithographs, specimens of which had been hung up in the Photograph Exhibition in Buchanan street. The steps of the process are as follows: 1. Bitumen is dissolved in sulphuric ether, and the solution is poured on an ordinary lithographic stone. The ether quickly evaporates, and leaves a thin coating of bitumen spread uniformly over the stone. This coating is sensitive to light, a discovery made originally by Mr. Niepce, of Chalons. 2. A negative on glass or waxed paper, is applied to the sensitive coating of bitumen, and exposed to the full rays of the sun

for a period longer or shorter, according to the intensity of the light, and a faint impression on the bitumen is thus obtained. 3. The stone is now placed in a bath of sulphuric ether, which almost instantaneously dissolves the bitumen, which has not been acted upon by light, leaving a delicate picture on the stone, composed of bitumen on which the light has fallen. 4. The stone after being carefully washed, may be at once placed in the hands of the lithographer, who is to treat it in the ordinary manner with gum and acid, after which, proofs may be thrown off by the usual process. Prof. Ramsey then proceeded to state that the above process, modified, had been employed with success to etch plates of steel or copper, without the use of the burin: 1. The metal plate is prepared with a coating of bitumen, precisely in the manner noticed above. 2. A positive picture on glass or paper is then applied to the bitumen, and an impression is obtained by exposure to light. 3. The plate is placed in a bath of ether, and the bitumen not acted upon by light is dissolved out. A beautiful negative remains on the plate. 4. The plate is now to be plunged into a galvano-plastic bath, and gilded. The gold adheres to the bare metal but refuses to attach itself to the bitumen. 5. The bitumen is now removed entirely by the action of spirits and gentle heat. The lines of the negative picture are now represented in bare steel or copper, the rest of the plate being covered by a coating of gold. 6. Nitric acid is now applied as in the common etching process. The acid attacks the lines of the picture formed by the bare metal, but will not bite into the gilded surface. A perfect etching is thus obtained.—*Pharm. Journ.*, Nov., 1855.

ON ALLOYS OF IRON AND ALUMINIUM.

By PROFESSOR CALVERT.

Messrs. Calvert and Johnson, of Manchester, have succeeded in preparing the following alloys of iron and potassium: 1st alloy: four equivalents of iron, 1 ditto of potassium. 2d alloy: 6 equivalents of iron, 1 ditto of potassium. These alloys were prepared with a view of solving one of the great chemical and commercial questions of the day—namely, that of rendering iron less oxidable when exposed to a damp atmosphere; as these gentlemen believe

that no kind of coating can be discovered which will resist the constant friction of water, as is the case with iron steamers. They have also succeeded in producing two new alloys, composed of iron, combined with that most valuable and extraordinary metal, aluminium, lately obtained by M. St. Claire Deville. These two alloys are composed as follows: 1st. 1 equivalent of aluminium; 5 ditto of iron. 2d. 2 equivalents of aluminium; 3 ditto of iron. The last alloy presents the useful property of not oxidizing when exposed to a damp atmosphere, although it contains 75 per cent. of iron.—*Ibid.*

Varieties.

On Perfumery. By SEPTIMUS PIESSE.

(Continued from page 86.)

POMADES AND OILS.

The name of pomatum is derived from *pomum*, an apple, because it was originally made by macerating over-ripe apples in grease.

If an apple be stuck all over with spice, such as cloves, then exposed to the air for twenty-four hours or more, and afterwards macerated in purified melted lard, or any other fatty matter, the grease will become perfumed. Repeating the operation with the same grease several times produces real "pomatum."

According to a recipe published more than a century ago the form given is:—"Kid's grease, an orange sliced, pippins, a glass of rose-water, and half a glass of white wine, boiled and strained, and at last sprinkled with oil of sweet almonds." The author, Dr. Quincy, observes that "the apple is of no significance at all in the recipe," and, like many authors of the present day, concludes that the reader is as well acquainted with the subject as the writer, and therefore considers that the weights or bulk of the materials in his recipe are, likewise, of no significance. Unguent, pomatum, ointment, are synonymous titles for medicated and perfumed greases, according to the ancient writers. Among biblical interpreters, the significant word is mostly rendered "ointment;" thus we have in Prov. xxvii. 9, "Ointment and perfume rejoice the heart;" in Eccles. ix. 8, "Let thy head lack no ointment."

Perfumers, acting upon their own or Dr. Quincy's advice, pay no regard to the apples in the preparation of pomatum, but make it by perfuming

lard or suet, or a mixture of wax, spermaceti, and oil, or some of them or all blended to produce a particular result, according to the name that it bears.

The most important thing to consider in the manufacture of pomatum, &c., is to start off with a *perfectly inodorous* grease, whatever that grease may be.

Inodorous lard is obtained thus:—Take, say 28 lbs. of *perfectly fresh* lard, place it in a well-glazed vessel, that can be submitted to the heat of a boiling salt-water bath, or by steam under a slight pressure; when the lard is melted, add to it one ounce of powdered alum and two ounces of table salt; maintain the heat for some time, in fact till a scum rises, consisting in a great measure of coagulated proteine compounds, membrane, &c., which must be skimmed off; when the liquid grease appears of a uniform nature it is allowed to grow cold.

The lard is now to be washed. This is done in small portions at a time, and is a work of much labor; the result, however, repays the time bestowed. About a pound of the grease is now placed on a slate slab a little on the incline, a supply of good water being set to trickle over it; the surface of the grease is then constantly renewed by an operative working a muller over it precisely as a color-maker grinds paints in oil. In this way the water removes any traces of alum or salt, also the last traces of nitrogenous matter. Finally, the grease, when the whole is washed in this way, is re-melted, the heat being maintained enough to drive off any adhering water. When cold it is finished.

Although purifying grease in this way is troublesome, and takes a good deal of time, yet unless done so, is totally unfit for perfuming with flowers, because a bad grease will cost more in perfume to cover its *mal odeur* than the expense of thus deodorizing it. Moreover, if lard be used that “smells of the pig” it is next to impossible to impart to it any delicate odor; and if strongly perfumed by the addition of ottes the unpurified grease will not keep, but quickly becomes rancid. Under any circumstances, therefore, grease that is not *perfectly inodorous* is a very expensive material to use in the manufacture of pomades.

In the South and flower-growing countries, where the fine pomades are made by ENFLEURAGE, or by MACERATION (see vol. 2d, (3d series, 1854) pag. 273 of this Journal) the purification of grease for the purpose of these manufactures is of sufficient importance to become a separate trade.

The purification of beef and mutton suet is in a great measure the same as that for lard: the greater solidity of suets requires a mechanical arrangement for washing them of a more powerful nature than can be applied by hand labor. Mr. Ewen, who is undoubtedly the best fat purifier in London employs a stone roller rotating upon a circular slab; motion is given to the roller by an axle which passes through the centre of the slab, or rather stone bed, upon which the suet is placed; being higher in the centre than at the sides, the stream of water flows away after it has once passed over

the suet; in other respects the treatment is the same as for lard. These greases used by perfumers have a general title of "body," tantamount to the French nomenclature of *corps*; thus we have pomades of hard corps (suet), pomades of soft corps (lard). For making *extraits*, such as *extrait de violette*, *jasmin*, the pomades of hard corps are to be preferred, but when scented pomade is to be used in fabrication of unguents for the hair, pomades of soft corps are the most useful.

The method of perfuming grease by the direct process with flowers having already been described under the respective names of the flowers that impart the odor thereto, it remains now only to describe those compounds that are made from them, together with such incidental matter connected with this branch of perfumery not previously mentioned.

ACACIA POMADE, commonly called CASSIE POMATUM, is made with a purified body grease, by maceration with the little round yellow buds of the *Acacia Farnesiana*.

Black currant leaves, and which the French term *casse*, have an odor very much resembling cassie (*acacia*), are used extensively for adulterating the true acacia pomades and oils. The near similarity of name, their analogous odor (although the plants have no botanical connexion), together with the word *cassia*, a familiar perfume in England, has produced generally confused ideas in this country as to the true origin of the odor now under discussion. Cassie, casse, cassia, it will be understood now are three distinct substances; and in order to render the matter more perspicuous in future, the material will always be denominated ACACIA, if prepared from the *Acacia Farnesiana*; CASSE, when from *black currant*; and CASSIA if derived from the bark of the *Cinnamomum cassia*.

BENZOIN POMADE AND OIL.

Benzoic acid is perfectly soluble in hot grease. Half an ounce of benzoic acid being dissolved in half a pint of hot olive or almond oil, deposits on cooling beautiful acicular crystals, similar to the crystals that effloresce from vanilla beans; a portion of the acid, however, remains dissolved in the oil at the ordinary temperature, and imparts to it the peculiar aroma of benzoin; upon this idea is based the principle of perfuming grease with gum benzoin by the direct process, that is, by macerating powdered gum benzoin in melted suet or lard for a few hours, at a temperature of about 80° C. to 90° C. Nearly all the gum resins give up their odoriferous principle to fatty bodies, when treated in the same way; this fact becoming generally known will probably give rise to the preparation of some new remedial ointments, such as *Unguentum myrrhæ*, *Unguentum assafœtide*, and the like.

TONQUIN POMADE, and TONQUIN OIL, are prepared by macerating the ground Tonquin beans in either melted fat or warm oil, from twelve to twenty-eight hours, in the proportion of

Tonquin beans	½ lb.
Fat, or oil	4 lbs.

Strain through fine muslin; when cold the grease will have a fine odor of the beans.

VANILLA OIL AND POMADE.

Vanilla pods	1 lb.
Fat or oil	4 lbs.

Macerate at a temperature of 25° C. for three or four days; finally strain.

These pomatums and oils, together with the French pomades and huiles already described, constitute the foundation of the preparations of all the best hair greases sold by perfumers. Inferior scented pomatums and oils are prepared by perfuming lard, suet, wax, oil, &c., with various ottos; the results, however, in many instances more expensive than the foregoing, are actually inferior in their odor or bouquet—for grease, however slightly perfumed by maceration or enfluerage with flowers, is far more agreeable to the olfactory nerve than when scented by ottos.

The undermentioned greases have obtained great popularity, mainly because their perfume is lasting and flowery:—

BEARS'-GREASE.

The most popular and "original" bears'-grease is made thus:—

Huile de rose	} of each 1 lb.	Lard	12 lb.
" fleur d'orange		Acacia pomade	2 lb.
" acacia		Otto of bergamot	4 oz.
" tubereuse and jasmin		Otto of cloves	2 oz.
Almond oil	14 lb.		

Melt the solid greases and oils together by a water-bath, then add the ottos.

Bears'-grease thus prepared is just hard enough to "set" in the pots at a summer heat. In very warm weather, or if required for exportation to the East or West Indies, it is necessary to use in part French pomatums instead of oils, or more lard and less almond-oil.

CIRCASSIAN CREAM.

Purified lard	1 lb.	Almond oil, colored with alkanet	2 lb.
Benzoin suet	1 lb.	Otto of rose	1 oz.
French rose pomatum	1 lb.		

BALSAM OF FLOWERS.

French rose pomatum	12 oz.	Almond oil	2 lb.
" violet pomatum	12 oz.	Otto of bergamot	1 oz.

CRYSTALLIZED OIL.—(First quality.)

Huile de rose	1 lb.	Huile de fleur d'orange	1 lb.
" tubereuse	1 lb.	Spermaceti	8 oz.

(Second quality.)

Almond	2 1/2 lb.	Otto of lemon	3 oz.
Spermaceti	1 lb.		

Melt the spermaceti in a vessel heated by a water-bath, then add the oils; continue the heat until all flocks disappear; let the jars into which it is poured be warm; cool as slowly as possible to ensure good crystals; if cooled rapidly the mass congeals without the appearance of crystals. This preparation has a very nice appearance, and so far sells well; but its con

tinued use for an oil. The hair renders the head scurfy; indeed, the crystals of sperm may be combed out of the hair in flakes after it has been used a week or two.

CASTOR OIL POMATUM.

Tubereuse pomatum	1 lb.	Almond oil	½ lb.
Castor oil	½ lb.	Otto of bergamot	1 oz.

BALSAM OF NEROLY.

French rose pomatum	½ lb.	Almond oil	¾ lb.
" jasmin pomatum	½ lb.	Otto of neroly	1 drachm.

MARROW CREAM.

Purified lard	1 lb.	Otto of cloves	½ drachm.
Almond oil	1 lb.	" bergamot	½ oz.
Palm oil	1 oz.	" lemon	1½ oz.

MARROW POMATUM.

Purified lard	4 lb.	Otto of bergamot	½ oz.
" suet	2 lb.	" cloves	3 drachms.
Otto of lemon	1 oz.		

Melt the greases, then beat them up with a whisk or flat wooden spatula for half-an-hour or more; as the grease cools, minute vesicles of air are enclosed by the pomatum, which not only increases the bulk of the mixtures, but imparts a peculiar mechanical aggregation, rendering the pomatum light and spongy; in this state it is obvious that it fills out more profitably than otherwise.

COMMON VIOLET POMATUM.

Purified lard	1 lb.	Washed rose pomatum	4 oz.
Washed acacia pomatum	6 oz.		

Manipulate as for marrow pomatum.

In all the cheap preparations for the hair, the manufacturing perfumers use the washed French pomatums and the washed French oils for making their greases. Washed pomatums and washed oils are those greases that originally have been the best pomatums and huiles prepared by enfleurage and by maceration with the flowers; which pomades and huiles have been subjected to digestion in alcohol for the manufacture of essences for the handkerchief. After the spirit has been on the pomatums, &c., it is poured off; the residue is then called *washed pomatum*, and still retains an odor strong enough for the manufacture of most hair greases.

For pomatums of other odors it is only necessary to substitute rose, jasmin, tubereuse, and others, in place of the acacia pomatum in the above formulæ.

POMADES DOUBLE MILLEFLEUR.

Rose, jasmin, fleur d'orange, violet, tubereuse, &c., are all made (in winter) with two-thirds best French pomatum, one third best French oils; in summer, equal parts.

POMADE A LA HELIOTROPE.

French rose pomade	1 lb.	Huile fleur d'orange	2 oz.
Vanilla oil	½ lb.	Otto of almonds	6 drops.
Huile de jasmin	4 oz.	" cloves	3 drops.
" tubereuse	2 oz.		

HUILE ANTIQUE.

A la Heliotrope.

Same as the above, substituting rose oil for the pomade.

PHILOCOME.

The name of this preparation—which is an alliance of Greek and Latin, signifying “a friend to the hair”—was first introduced by the Parisian perfumers, and a very good name it is, for philocome is undoubtedly one of the best unguents for the hair that is made.

PHILOCOME.—(First quality.)

White wax	10 oz.	French jasmin	$\frac{1}{2}$ lb.
French rose oil	1 lb.	“ fleur d’orange	1 lb.
“ acacia	$\frac{1}{2}$ lb.	“ tubereuse	1 lb.

Melt the wax in the huiles by a water-bath at the lowest possible temperature. Stir the mixture as it cools; do not pour out the philocome until it is nearly cool enough to set: let the jars, bottles, or pots into which it is filled for sale be slightly warmed, or at least of the same temperature as the philocome, otherwise the bottles chill the material as it is poured in, and make it appear of an uneven texture.

PHILOCOME.—(Second quality.)

White wax	5 oz.	Otto of lemon	$\frac{1}{2}$ oz.
Almond oil	2 lb.	“ lavender	2 drachms.
Otto of bergamot	1 oz.	“ cloves	1 drachm.

FLUID PHILOCOME.

Take 1 ounce of wax to 1 pound of oil.

HARD OR STICK POMATUMS.

Purified suet	1 lb.	Tubereuse pomatum	$\frac{1}{2}$ lb.
White wax	1 lb.	Otto of rose	1 drachm.
Jasmin pomatum	$\frac{1}{2}$ lb.		

ANOTHER FORM.

Suet	1 lb.	Otto of bergamot	1 oz.
Wax	$\frac{1}{2}$ lb.	“ cassia	1 drachm.

The above recipes produce WHITE BATONS. BROWN and BLACK BATONS are also in demand. They are made in the same way as the above, but colored with lamp-black or umber ground in oil. Such colors are best purchased ready ground at an artist’s colorman’s.—*Annals of Pharmacy.*

Tannic Acid a Remedy for Chilblains. By PROF. BERTHOLD.—The extract obtained by boiling $1\frac{1}{2}$ oz. of pounded nut-galls with 0.5 lb. of rain-water, has an excellent action upon chilblains. The decoction may be employed as a bath, or laid upon the swellings by means of rags. The itching and burning disappear in two or three days. In old cases the remedy must be continued longer. Oak-bark may also be employed; a mixture of 1 lb. of oak-bark and 2 lbs. of water being applied as a poultice. This remedy must not be used with broken or festering chilblains.—*London Pharm. Jour. from Gottinger Gel, Auz. Polytechn. Central Blatt, 1855.*

Emulsion of Chloroform.—M. G. Daunecy, Pharmacien of Bordeaux, recommends the following potion as the most convenient way of administering chloroform internally, viz:

Take of Pure Chloroform	half a drachm
Oil of sweet almonds	four drachms
Powdered Gum Arabic	two drachms
Syrup of Orange Flower	fifteen drachms
Distilled water	thirty drachms

M. Daunecy observes that when the chloroform is not pure, and contains alcohol, it forms a cloudy mixture with the almond oil. Sulphuric ether is the only substance that is an exception to this rule.

Compound Tonic Syrup of Orange Peel as an Anti-Dyspeptic.

By M. BOURGEOIS.

Take of Bitter orange peel	16 drachms
Quassia	9 drachms
Catechu, bruised	3 drachms
Gum Arabic	25 drachms

Infuse the three first substances in 130 drachms of boiling water; dissolve the gum in 50 drachms of water. Then mix the infusion with the dissolved gum, and make syrup with 300 drachms of sugar.

Ferruginous Pills of Dr. BRETONNEAU, according to M. GARDIS, Pharmacien of Villiers le Bel.

Take of Iron reduced by hydrogen	250 grains
Sulphate of quinia	15 "
Powdered Ginger	15 "
Extract of Yellow Bark	45 "
Compound Extract of Rhubarb	45 "
Socotrine aloes in powder	8 "
Syrup of Saffron	1 drachm.
Simple syrup q. s.	

Make one hundred pills, which should be preserved in a square or cylindrical bottle of blue glass, hermetically sealed.

The dose is one in the morning early, and one at bed time; after four days, take two in the morning and two at night, and continue doing so for some time. They do not constipate but act as a slight laxative.—*Repert. de Pharmacie.*

Quick Process for Mercurial Ointment.—M. Bernier, Pharmaceutist of Reuwez (Ardennes), recommends the following process. Take one third of the lard to be used for the ointment, heat it in a skillet of copper till it com-

mences to disengage vapors and burn, and then pour it into an earthen vessel, and place it in the cellar for ten or fifteen days. Use this lard to extinguish the mercury, employing an iron mortar, and observing to add the mercury gradually as each addition disappears. The mercury is soon perfectly extinguished when the rest of the lard is incorporated thoroughly, the whole operation requiring but an hour.—*Repertoire de Pharmacie.*

Anti-Gout Wine of Dr. Anduran.

Take of Colchicum bulbs collected at the proper season	30 parts.
Leaves of the Ash Tree	30 "
Malaga wine	500 "
Macerate for eight days and filter, then add	
Tincture of Aconite	8 parts.
Tincture of Digitalis	5 "

Take a teaspoonful morning and evening in a cup of tea for gout or articular rheumatism.—*Repertoire de Pharmacie.*

Spigelia Jelly.—This elegant formula we find in the *Annuaire de Therapeutique* for 1855, taken from the *Gazette Med. de Liege*. It is recommended by M. Bonnewin as the most agreeable form of administering this favorite anthelmintic. R. Pulv. spigelia, ʒviiij. ; Corsica moss, ʒiv. ; boiled in 16 ounces of rain-water until it is reduced to 10 ounces. The decoction should then be decanted into a sauce-pan containing 2½ ounces of white sugar, and again boiled down, carefully stirring with a silver spoon, until 4 ounces of jelly are obtained. It then should be strained through a sieve into a jar containing two drops of the essence of citron or caraway. This jelly is a very active anthelmintic, and so agreeable that children will seek for it with avidity. If kept in a cool place, it will remain good for some time, and its flavor may be still more improved by substituting for the sugar either the syrup of gooseberries or mulberries.—*Virginia Med. and Surg. Journal.*

On the Use of Liquid Caoutchouc.—The utility of collodion, as an impermeable plaster in various cutaneous affections, is very generally acknowledged. It has, however, some disadvantages in certain cases, arising from its inelasticity, which makes its extensive application inconvenient, or inadmissible. In such cases, thin laminæ of gutta percha, oil silk, or adhesive plaster, are generally used. About a year since, I was presented by Mr. S. T. Armstrong with a bottle of the milk of the *Hevea* or Caoutchouc in the liquid form in which it exudes from the tree. It is preserved in that state by the addition of a small proportion of free ammonia, and is now introduced as an article of commerce for manufacturing purposes, and, from

my experience with it, I am compelled to call the attention of the profession to it, as a most useful contribution to our *materia medica*. It is of the color and consistency of pure milk, (if my recollections do not deceive me), but becomes transparent as soon as dry. Owing to its great elasticity, it does not contract so violently as the collodion, it adheres closely to the skin, and allows entire freedom of motion and application to any extent. In burns it has an advantage over anything I have ever used, as also in erysipelas. An acquaintance with it by surgeons will lead, I do not doubt, to many valuable improvements in surgical appliances.—*New York Journal of Medicine*.

Deodorizing Properties of Coffee.—The London Medical Gazette gives the result of numerous experiments with roasted coffee, proving that it is the most powerful means, not only of rendering animal and vegetable effluvia innocuous, but of actually destroying them. A room in which meat, in an advanced state of decomposition, had been kept for some time, was instantly deprived of all smell, on an open coffee roaster being carried through it containing a pound of coffee newly roasted. In another room, exposed to the effluvia occasioned by the clearing out of a cess-pool, so that sulphuretted hydrogen and ammonia, in great quantity, could be chemically detected, the stench was completely removed within half a minute, in the employment of three ounces of fresh roasted coffee; while the other parts of the house were permanently cleared of the same smell by being simply traversed with the coffee-roaster although the cleansing of the cess-pool continued several hours after. The best mode of using the coffee as a disinfectant, is to dry the raw bean, pound it in a mortar, and then roast the powder in a moderately heated iron plate, until it assumes a dark brown tint, when it is fit for use. Then sprinkle it in sinks and cess-pools, or lay it on a plate in the room which you wish to have purified. Coffee acid or coffee oil acts more readily in minute quantities.—*Eclectic Med. Jour.*

Cultivation of Liquorice in this Country.—A correspondent of the *New York Times* (Mr. William R. Prince, of Flushing, L. I.) is of the opinion that the officinal *Glycyrrhiza glabra* may be easily cultivated in this country. He says: "The liquorice is one of the most important plants that is destined to be added to American agriculture, and merits at our hands an early adoption, on account of the facility of its culture, its great usefulness for various purposes, and for the large profit it yields to the cultivator. When the high-priced lands of England are profitably devoted to it, how much more profitable must it prove, where land is plentiful and cheap, and where, above all, as in several of the Western States, the soil is naturally permeable, free from all stones, and no manuring required. It is, indeed, mortifying to American pride, to witness the many thousands now paid to

Europe for an article like this, so simple in its culture that we ought to be the largest exporters of it, thus adding another item to our 'granary of the world.'

"It has long been extensively cultivated in Spain, and from the commencement of Queen Elizabeth's reign it has been largely grown in various parts of England."

Besides its employment in medicine, liquorice is extensively used in the manufacture of porter and other preparations containing saccharine ingredients, and its introduction into this country could not fail to be profitable. *Boston Med. and Surg. Jour.*

On the Artificial Preparation of Alcohol. By M. MARX.—Berthelot has lately stated, that alcohol may be formed from olefiant gas. Marx shows that this discovery was made twenty-seven years ago by Henry Hennell. In the Philosophical Transactions for 1828, p. 365, there is a theory of the formation of ether, in which Hennell says, "This theory is illustrated by the employment of olefiant gas as the hydrocarbonous base; for, by combining this gas with sulphuric acid, we may form sulphovinic acid, from which we may obtain at pleasure, by varying the decomposition, either alcohol or ether."—*Jour. fur Prakt. Chem.*, lxx. p. 92.

Castor Oil as a Mechanic il Lubricant. By ALEXANDER CHAPLIN.—In these times, when workshop economics are claiming so large a share of attention, it may be of importance to the readers of the *Practical Mechanics' Journal* to know that there is considerable advantage and economy in the use of pure castor oil as a lubricating material for machinery. For this purpose, I have found it to go at least twice as far as any other oil. The causes of this gain are, that this oil does not run out of the bearing, whilst it does not clog from viscosity, and it is entirely free from acidity of every kind. Actual experience has told me, that bearings which formerly required oiling twice or thrice a day, are kept in perfect order by one daily application of fine castor oil. As to cost, the present market price leaves, under the circumstances, a saving of 50 per cent.—*Lon. Prac. Mech. Journ.*, Oct. 1855.

Note on the Natural Mineral Waters of Algeria. By SIR JOSEPH F. OLIFFE.—Amongst the valuable products of Algeria exhibited in the Palais d'Industrie, not the least worthy of study and attention is the collection of natural mineral waters of that country. No less than forty-eight specimens of chalybeate, acidulous, saline, and sulphurous waters are exhibited, derived from various springs in Algeria. Many of these spas were well known to, and frequented by the Romans, as the remains of magnificent thermæ, piscinæ, &c., still attest. At the present day most of them enjoy reputation amongst the Arabs, and the French Government have granted consider-

able sums towards the restoration of some. The sulphuro-saline springs of *Hamma Mescoutin*, in the province of Constantine, deserve special notice, not only from their efficacy, but from the fact that in these arsenic was first discovered; the consequence was, that the researches of Chemists were directed, in analysing mineral waters, to the presence of arsenic as a constituent, and that this mineral has been lately ascertained to exist in several of our European springs, such as Montdore and many others.—*London Pharm. Jour.*

On Writing Inks. By JAMES STARK, M. D., F. R. S. E.—The author stated that in 1842, he had commenced a series of experiments in writing inks, and up to this date had manufactured 229 different inks, and tested the durability of writings made with these on all kinds of paper. As the result of his experiments, he showed that the browning and fading of inks resulted from many causes, but in ordinary inks chiefly from the iron becoming peroxygenated, and separating as a heavy precipitate. Many inks, therefore, when fresh made, yielded durable writings; but when the ink became old, the tannogallate of iron separated, and the durability of the ink was destroyed. From a numerous series of experiments, the author showed that no salt of iron and no preparation of iron equalled the common sulphate of iron, that is, the commercial copperas, for the purposes of ink-making, and that even the addition of any persalt, such as the nitrate or chloride of iron, though it improved the present color of the ink, deteriorated its durability. The author failed to procure a persistent black ink, from manganese or other metal or metallic salt. The author exhibited a series of eighteen inks, which had either been made with metallic iron, or with which metallic iron had been immersed, and directed attention to the fact that, though the depth and body of color seemed to be deepened, yet in every case the durability of writings made with such ink was so impaired, that they become brown and faded in a few months. The most permanent ordinary inks, where shown to be composed of the best blue gall-nuts with copperas and gum, and the proportions found on experiment to yield the most persistent black, were six parts of best blue-galls to four parts of copperas. Writings made with such an ink, stood exposure to sun and air for twelve months, without exhibiting any change of color, while those made with inks of every other proportion or composition had more or less of their color discharged when similarly tested. This ink, therefore, if kept from moulding and depositing its tannogallate of iron, would afford writings perfectly durable. It was shown that no gall and logwood ink was equal to the pure gall ink, in so far as durability in the writings was concerned. All such inks lost their color and faded sooner than pure gall inks, and several inks were exhibited, which, though durable before the addition of logwood, faded rapidly after logwood was added to them. Sugar was shown to have an especially hurtful action on the durability of inks

containing logwood—indeed on all inks. Many other plain inks were exhibited, and their proportions described—as gallo-sumach inks, myrobalans ink, Runge's ink,—inks in which the tannogallite of iron was kept in solution by nitric, muriatic, sulphuric, and other acids, or by oxalate of potash, chloride of lime, &c. The myrobalans ink was recommended as an ink of some promise for durability, and as the cheapest ink it was possible to manufacture. All ordinary inks, however, were shown to have certain drawbacks, and the author endeavored to ascertain by experiment, whether other dark substances could be added to inks, to impart greater durability to writings made with them, and at the same time prevent those chemical changes which were the cause of ordinary inks fading. After experimenting with various substances, and, among others, with Prussian blue and indigo dissolved in various ways, he found the sulphate of indigo to fulfil all the required conditions; and, when added in the proper proportion to a tannogallate ink, it yielded an ink which is agreeable to write with, which flows freely from the pen, and does not clog it, which never moulds, which, when it dries on the paper, becomes of an intense pure black, and which does not fade or change its color, however long kept. The author pointed out the proper proportions for securing these properties, and showed that the smallest quantity of the sulphate of indigo which could be used for this purpose, was eight ounces for every gallon of ink. The author stated that the ink he preferred for his own use was composed of twelve ounces of galls, eight ounces of sulphate of indigo, eight ounces of copperas, a few cloves, and four or six ounces of gum-arabic, for a gallon of ink. It was shown that immersing iron wire or filings in these inks, destroyed their durability as much as similar treatment destroyed ordinary inks. He therefore recommended that *all legal deeds or documents should be written with quill pens*, as the contact of steel invariably destroys more or less the durability of every ink. The author concluded his Paper with a few remarks, on copying inks, and indelible inks, showing that a good copying ink has yet to be sought for, and that indelible inks, that will resist the pencilings and washings of the chemist, and the forger, need never be looked for.—*Lond. Civ. and Arch. Jour.*, August 1855, and *Frank. Inst. Jour.*

On the Extraction of Metals from the Ore of Platinum. By M. FRÉMY.--M. Frémy treated of the preparation of osmium, rhodium, and iridium, from the residues of the platinum ores. The preparation of osmium according to the old method is attended with great difficulties and actual danger. M. Frémy proposed to prepare osmium by passing atmospheric air over the residual ore, heated in a porcelain tube. The volatile osmic acid is condensed in glass balloons, and the less volatile oxide of ruthenium is found at the extremity of the heated tube. The rhodium remaining in the residual mass is separated from the other metal contained, by chlorine gas at a high temperature.—*Frank. Inst. Jour.*

On the Polar Decomposition of Water by Frictional and Atmospheric Electricity. By PROF. ANDREWS.—The author having drawn attention to the fact, that water had never been decomposed by the action of the common friction electricity, so as to collect the gases and exhibit them at the opposite poles, stated that the cause of the failure of the experiment was the solution of the gases in the mass of the liquid. By fusing platina wires in thermometer tubes, this difficulty is avoided, and the gases may then be obtained and collected with the same facility as in ordinary eudiometric experiments. By arranging a series of such tubes, the operations may be almost indefinitely repeated. On raising an electrical kite, the author succeeded in obtaining the polar decomposition of water by atmospheric electricity. The observations were made in fine weather, when the atmosphere was not usually charged with electricity. Although the gases were easily collected and measured, from the delicate form of apparatus employed, the quantity of water decomposed in this case amounted to only one 700,000th of a grain in the hour.—*F. Inst. Journal*, Dec. 1855.

Editorial Department.

CERTIFICATE OF MEMBERSHIP OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—At the last meeting of the Association a committee was appointed to get up a certificate of membership, with power to decide on the design and manner of execution. The committee having completed their labor are about distributing the certificate to the several members who have subscribed for it. The design originated with the Committee, but in perfecting it they are indebted to Mr. Robert C. Davis of Philadelphia, as well as to the artist Mr. Magee. The following is a description of the engraving.

Near the centre of the picture is a monument in honor of Pharmacy, consisting of a square pannelled base, from which rises a fluted column, surmounted by the mortar and pestle. Encircling the shaft of the column is a winding scroll, on which appear the names of Galen, Geber, Avicenna, Basil Valentine, Lemery, Baumé, Scheele, Davy, Sertuerner, Robiquet, Pereira, and Liebig. One of the panels represents an alchemist at his furnace, the other exhibits a series of pharmaceutical apparatus, the balance, gas burners, Liebig's condenser, graduated measure, 1000 gr. bottle, etc. There are four human figures; an European, a Turk, a Chinese, and an American Indian. The European is leaning gracefully with his left arm on the monument, with a book (the *Pharmacopœia*) in his left hand, whilst his

index finger points toward the Structure. The Turk holds in his right hand the Poppy, and *Acacia vera*, whilst his left is extended toward the horizon where a group of pyramids symbolize the East. The Chinese holds in his right hand the *Laurus camphora* and *Piper nigrum*, whilst at his feet is a pile of Chinese books, toward which he points. The American Indian, on the right of the picture, is represented as in the act of speaking, with a branch of *Cinchona* in his right hand, and his left extended toward the south, indicated in the horizon by a volcano (Cotopaxi) in the Andes, and by a Mexican teocalis. Before him on the ground is a rude wicker basket containing a variety of plants from Southern America, among which may be recognized *Ipecacuanha*, *Cinchona*, *Quassia*, *Augustura*, *Copaiba*, *Guaiacum*, *Oanella*, *Sarsaparilla* and *Jalap*; whilst around him, growing from the soil, are several well-known North American plants, as *Senega*, *Spigelia*, *Sanguinaria*, *Podophyllum*, etc.

The explanation of the picture is as follows. The European represents the scientific pharmacy of all countries; every region contributes to its *ateria medica*; and his scientific art, illustrated by the illustrious individuals named on the column, has votaries in every country where European civilization has extended—without reference to nationality. The Arabian symbolizes that imperfect empirical pharmacy that pertains to Mahomedan countries. The Chinaman signifies that ultra oriental pharmacy now practiced in India, China, and Japan, embraced in the volumes before him, and which he boasts as antedating the earliest records of European science. The Indian is introduced to Americanize the picture. He is represented as saying, however valuable are the plants growing around him, and with the virtues of which he is familiar, those given by the Great Spirit to his aboriginal brethren of Tropical America, of which the basket contains a sample, are far more important and useful.

The wording of the certificate is as follows: "This is to certify that
has been elected member of the American
Pharmaceutical Association. In testimony whereof the signatures of the
proper officers are hereunto affixed

Attested at

day of 18

Secretary.

President.

V. President.

The general effect of the whole is good, and the design appropriate to the object in view.

PHARMACY IN BALTIMORE.—A correspondent informs us that the pharmacists of Baltimore have held a meeting preparatory to revivifying the "Maryland College of Pharmacy," (which for several years has ceased to exert any influence in that city,) or to establishing a new institution more likely to grow into usefulness. This is good news. Baltimore possesses

some able pharmacutists, who will give character to any movement in which they may take part, and it is greatly to be desired that all such should be enlisted, and every other well disposed member of the profession who is favorable to progress, notwithstanding such may be deficient themselves. We have always believed that the movement of 1842 was too exclusive, too few were embraced in it to render it popular, and, as a consequence, it did not succeed. The object of such organizations should be to raise the status of the entire body; its fruits should not be for those already enlightened, so much as for those who desire improvement; and the prominent part taken by the more educated should be viewed, as it generally deserves to be, as their good will offering. We are far from advocating an indiscriminate admission, but every one, however small his pretensions, who has correct views of the vocation of the apothecary, should be included. We trust that the new organization will be in full operation by September next, when the American Pharmaceutical Association will meet in Baltimore, and claim fellowship through their regularly appointed delegates.

PHARMACY IN THE DISTRICT OF COLUMBIA.—A correspondent in Georgetown, D. C., gives information that the preliminary steps towards an organization of the pharmacutists of Washington and Georgetown have been taken, and that it is proposed to apply to Congress for a charter with collegiate powers should the organization be effected. This is also good news.

FLUID EXTRACT OF ERGOT.—A correspondent calls our attention to an oversight in the formula for fluid Extract of Ergot at page 302, of the volume for 1855, in which the author has confounded Avoirdupois and Troy weight. The strength indicated by the declaration, "that a fluid drachm represents 40 grains" would give in two pints $256 \times 40 = 10240$ grains or rather less than two pounds Troy; so that it is probable Mr. Baker intended Troy instead of Avoirdupois, or if the latter, that he must have expressed the strength incorrectly.

Chimie appliquée a la physiologie et therapeutique. By M. LE DOCTEUR MIALHE, Pharmacien de l'Empereur, Professeur Agrégé a la Faculté de Médecine de Paris, etc. Paris, 1855, pp. 703 octavo.

We acknowledge the reception of this book from the author. It has not been possible to introduce a review of it into this number, but must content ourselves at present with a short notice of its contents. Dr. Mialhe has long directed his attention to that part of therapeutics which refers to the changes produced on medicines (organic and inorganic,) after their ingestion, which has led him to extend his investigations to embrace the physio-

logical effects consequent upon their entrance into the circulation, and the application of the facts thus arrived at, to those altered conditions which more particularly interest the pathologist.

In treating this interesting subject, M. Mialhe commences by considering together in a chapter, the phenomena of oxidation in the animal economy, which embraces, not only those instances in which vital and experimental chemistry appear to operate similarly, but those more obscure and complex processes wherein such agents as diastase, pepsin, etc. take part, and produce changes analogous to fermentation. In this chapter, the modes of action of the saliva and gastric juice are discussed. The presence of a principle in the saliva, nearly identical with diastase, discovered by the author, is announced, and its properties described as very similar to the diastase of malt. M. Mialhe finds that its action on fecula is precisely that of vegetable diastase, rendering it into dextrine and sugar, and thus bringing it to a condition fit for absorption and assimilation, and this whether the starch be in its granule or after it is cooked and the granule ruptured. The author believes that amylaceous food, acted on by the salivary ferment, in the stomach and duodenum, is the main source of the normal sugar of the economy, and in this regard, he differs from M. Bernard, who believes the liver to be a sugar secreting organ and the chief source of that substance.

The interesting questions connected with the digestion and assimilation of the protein bodies, (albumen, &c.,) are also discussed in this chapter; which concludes with a consideration of those diseased conditions in which these bodies are thrown out of the system by the alterations of the tissues and fluids, as in Bright's disease.

The *second* chapter treats of absorption in general.

The *third* chapter, the most important and extensive, treats of the absorption of medicinal and poisonous substances, that are insoluble or but little soluble, as carbon, sulphur, phosphorus, magnesia, oxide of iron, calomel, the iodides, etc., etc.

The *fourth* chapter, which is a corollary to the preceding on absorption, treats chiefly of the action of poisons and the various influences which modify their effects as taken by different individuals.

The *fifth* chapter discusses the various forms of medicines, as powders, pills, emulsions, extracts, syrups, etc. These forms, as regards their eligibility for presenting medicines to the stomach, are reviewed by the author, and many strictures drawn, which we should like to present here but for want of space. He extends the signification of Pharmacy far beyond what is usually understood by that term; thus—

1st, The knowledge which embraces the forms of medicines, and the changes which result from their treatment in course of preparation, he calls *pharmacography*.

2d. The modifications produced by the economy on ingested medicines, as regards the causes, circumstances and amount of them that are dissolved

(solution being an indispensable condition of their medicinal action,) he calls *pharmaco-chemistry*.

3d. The ultimate effects of medicines during the period of their absorption and excretion, he considers the most important of all, and calls it *pharmaco-dynamics*.

Thus understood, pharmacy might well claim to rank among the sciences, but we very much doubt the propriety of thus invading the province of the physiologist and therapist, in adding to the importance of our scientific art.

The *sixth* and last chapter is devoted to special medicines as *caustics*, *styptics*, *vesicants*, *purgatives*, etc. The subject of the action of cathartics is entered upon in detail, and the different classes, as saline, resinous, oily, soluble and insoluble, fully discussed. To attempt to introduce here any one of the numerous passages which possess novelty and interest, would be of no avail in conveying to the reader a correct idea of M. Mialhe's work, but we intend, on another occasion, when more space is at command, to give several extracts that will be read with interest. How far the author is supported in many of his ingenious views in *pharmaco-dynamics*, by facts and results, it is not our province to determine, yet we cannot but believe, notwithstanding the caution so often held up, that the chemistry of the animal economy is not the chemistry of the test tube, that M. Mialhe has materially advanced the limits of observation in that wonderful and perplexing problem, the *modus operandi* of the living animal organism in reference to ingested matter.

The book is from the establishment of M. Victor Masson, Paris, and is printed in a style of unusual excellence.

The Pharmacopœia of the United States of America. By authority of the National Medical Convention, held at Washington, A. D. 1850. Second Edition. Philadelphia: J. B. Lippincott & Co., 1855. pp. 317. Duodecimo.

Since the publication of the first Edition of the Pharmacopœia of 1820, the present is the first instance when it has been found necessary to issue an inter-periodical edition. The Committee of Publication have not felt justified in making additions to the work of preparations of recent origin, nor of new drugs, and have limited their labor to the correction of some few errors of the previous edition, and to a few changes (in the processes for Solutions of Nitrate of Iron and Citrate of Magnesia) which seemed to be much needed. In "accordance with an expressed wish from several respectable sources," this edition has been published in a cheaper form, so that it is within the reach of all; and it is to be desired that in the future Decennial revisions, attention will be given to this point, so essential in effecting the wide adoption of the Pharmacopœia as the authorized guide

book for the apothecary in the United States. The book is well printed, and the price but is one dollar, the previous edition being \$2.50. Every apothecary and physician should obtain a copy of it to be able to tell what are the preparations officially recognized as official.

Proceedings of the American Pharmaceutical Association, at the fourth Annual Meeting held in New York, Sept. 11th, 12th, 13th, 1855. Published by direction of the Association. New York, 1855. pp. 40. Octavo.

In addition to the minutes, &c. published in this Journal for Nov. 1855, the official "proceedings" contains the Reports of several committees possessed of considerable interest, as for instance those on "Home Adulterations," and on "the law regulating the importation of drugs and medicines." The former will be found at page 126 of this number.

OBITUARY.—**MAJENDIE, BRACONNOT, JOHNSTON, BECK, QUEVENNE, HURAUT, BAGET, AND HOLLOW.**—The last few months have been marked by the deaths of many noted physicians and pharmacutists. On the 8th of October, FRANCIS MAJENDIE, the celebrated physiologist and author of Majendie's Formulary, died at Paris, after a long illness, in the 73d year of his age. He was a native of Bordeaux, and has been thirty-four years a member of the Institute. Died, at Nancy, on the 13th Jan., 1855, M. Braconnot, long known as one of the earliest investigators of proximate organic chemistry. His numerous papers are interspersed over thirty volumes of the *Journal de Pharmacie*, and relate to a great variety of subjects. On the 18th of September, Prof. J. F. W. Johnston, the distinguished Agricultural Chemist of Durham, England, died at his residence in that place. Prof. Johnston is extensively known in this country, through his popular works on Chemical subjects. Died at Albany, on the 19th of November, Dr. Theodoric Romeyn Beck, author of the *Medical Jurisprudence* that bears his name. Died at Paris, M. Theodore Quevenne, *Pharmacien en chef de la Charite de Paris*, and one of the most distinguished pharmacutists of Paris. His investigations of senega and his introduction into medical use of "iron by hydrogen" are but a tythe of his numerous contributions to the progress of Pharmacy. M. T. Huraut, and M. Baget, *Pharmaciens* of Paris, known as writers and investigators, and Wm. A. Hollows, a prominent pharmaceutical chemist of London, also should be added to the list.